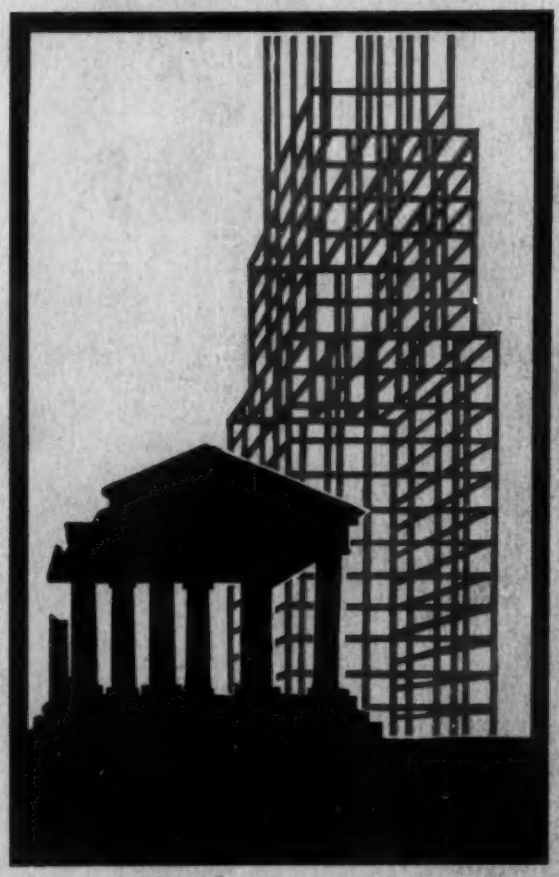
THE ARCHITECTURAL RECORD



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THOMPSON AND CHURCHILL, ARCHITECTS

Rendering by Chesley Bonestell

THE ARCHITECTURAL RECORD

AN ILLUSTRATED MONTHLY MAGAZINE OF
ARCHITECTURE & THE ALLIED
ARTS & CRAFTS

VOLUME 67 MARCH · 1930 NUMBER 3

THE PLACE OF THE APARTMENT IN THE MODERN COMMUNITY

BY HENRY WRIGHT, ARCHITECT

PROBABLY in no other field of design are there so many aggravating restrictions as in that of the apartment house. Here planning must take into account the most awkward restrictions of shape and area in the site; the most exacting demands of rental returns on high leaseholds; and the combined and overlapping restrictions of patchwork building codes, zone laws, and (in certain states) the erratic details of antiquated tenement-house codes. So peculiar and exacting are the interpretations of this last agency, that some of our best architectural firms, not specializing in apartment house work, have found it necessary, after executing what would otherwise be a complete and creditable design, to turn their work over to others specializing in speculative apartment building for a final dotting of the i's and crossing of the t's to pass the departmental inspectors.

Now it is with these difficult conditions in mind that we turn our thoughts again on this occasion to the year's progress in multifamily or apartment house planning, design, and construction, of the rank and file.

Without wishing to place too much reliance on mass statistics which, without careful analysis, may readily lead to false interpretation, we cannot fail to be impressed by the growth of the multifamily dwelling in the cities of our entire country. For the year just past we have built, in our fourteen largest cities, nearly three flats or apartments for every one- or two-family house.* Throughout all cities of over 100,000, of which there are 85, and which contain most of our population not living on farms, we have built 60% multifamily as against 40% single-family houses. The objection that such statistics are distorted by returns from New York and one or two other large cities, and so are not representative, is not borne out by the facts. Not only does New York continue to contribute a fair share of single family dwellings (in jerry-built wooden houses of which the less said the better) but, on the other hand, both New York and Chicago are illustrating the apartment house trend by definitely merging from a period of bad small-unit multifamily dwellings to a more promising (though far from ideal) standard of *large* apartment buildings.

Then there are certain of the old single-family standbys that have come, tempo-

* Throughout this paper the "single-family" dwelling refers also to the "duplex."

From the colored rendering by Chesley Bonestell

BATTERY TOWER, NEW YORK

THOMPSON AND CHURCHILL, ARCHITECTS

A residential development on the tip of Manhattan. For plans see page 295.

rarily at least, into the opposite column. Philadelphia, long the pride of those to whom the existence of a large percentage of single family houses was of more importance than the quality of the individual unit; and Kansas City, a stronghold of attractive and economical small houses, both passed over to the 40–60 ratio of multifamily to single-family dwellings during the first six months of 1929.

These figures may, of course, in individual cases represent a temporary condition caused by a lull in building or a shift in the loan market, but such factors can hardly be regarded as important ones in the present overwhelming trend toward multifamily building. The effective causes are probably to be found, individually or in varying combinations, among the following:

1. *An actual preference* by many people for the multifamily dwelling.

2. *An actual economy* which places the multifamily dwelling within the means of an increasing number of people who could not afford even the most flimsy of single-family houses in an inconvenient and incomplete neighborhood.

3. *The preference of loaning institutions*, which have found that, under present conditions, the more elastic equity of the multifamily building is to be preferred.

Probably the third of these causes is the most potent for the present. Just after the war, with strange new price levels, timid individuals and loaning institutions preferred to take a chance on small individual house loans with fairly rapid amortization, in the belief that, even if prices should fall off, the individual owner would stick by his bargain. But now building costs, despite expectations to the contrary, have continued a steady climb throughout the ten years from 1920 to 1930. This has resulted both in making the individual house a luxury and in establishing confidence in the multifamily dwelling.

Against such factors favorable to the larger buildings we must put two opposing ones: first that our prevailing small flat-buildings are badly planned and unlivable; and second, that rentals have been more or less irrevocably expanded on a basis of extravagant financing costs. So there may be an occasional back-swing of the pendulum giving a semblance of hope to those interests, and to that larger body of people among the disinterested public, who ever hold the single-family house in tender regard.

But let us suppose for the moment that conditions most favorable to the single-family house (including a marked improvement of its economic status and modernization of its form and construction) may happily arrest the present trend and hold the ratio at 2 to 1 of multifamily to single-house construction in urban areas: the concern of the writer would still be not with what is happening to this single-family third, but to the multiple building which houses two-thirds of our citizens. Can we longer turn our backs and feel that, because we may not like the idea of people living in such dwellings, we shall do nothing about designing them, and continue to relegate them to noisy locations of a poorer, left-over sort, while we continue to sub-divide our land in a manner which, not even suitable for private dwellings, is utterly abominable as a base for the larger structure?

Is it not time to take account of the place of the apartment in the community:

1. What kind of apartments are we getting?

2. Are the conditions favorable for making them the best possible places for living in?

3. Are they assuming their share of the responsibilities of the City?

4. Does the City assume its responsibilities toward the apartment?

5. How can a proper place be made in the apartment for the child inasmuch as we can hardly expect children to be possible only to the one-third of our families living in private houses.

Photo. Fairchild Aerial Surveys, Inc.

Central Park, New York City. The tall apartment, seeking a favored location on parks and main avenues, naturally gravitates to the periphery of every area bounded by main arteries

WHAT KIND OF APARTMENTS ARE WE GETTING?

There is a conspicuous tendency observable in our largest cities toward large elevator apartments. These are seeking the most favored areas, best served by streets and transit facilities, bordering on parks and lake fronts, and accessible to every sort of public improvement and social advantage.

Unfortunately, in spite of creditable advances in theoretical City Planning and applied Zoning, these desirable areas are still relatively few, leaving the hinterland very different indeed. The limited extent of the desirable locations makes for a large apartment to carry the high land value; and this type of building will continue a strong factor until the cities, recovering from the dislocations induced by rapid suburban expansion, can turn again to the difficult task of resurrecting their own internal mass of blighted areas.*

However, this new trend is not yet so dominant as to displace the popularity of the speculatively built small multifamily

* The general situation may be indicated by statistics from New York City. The total expenditure there in 1929 for apartments dropped from the 1928 level by 9%; but the number of apartments produced dropped 30%, by the fact that expensive Manhattan, which contributed only 30% of the total cost in 1928 went up to 60% in 1929, while the less expensive Bronx fell off, from 30% in 1928 to 17% in 1929. Since Manhattan apartments averaged $2,300 per room as compared with $1,200 for the Bronx, the large increase of money spent in Manhattan resulted in only a small increase of rooms built. In Manhattan 137 apartment houses cost an average of $1,250,000 apiece, housed an average of 115 apartments, and reached an average height of 17 stories. Nearly $40,000,000 was invested just in new apartments facing Central Park. However, these finer grade structures suffered heavily in the latter months as a result of the collapse of the stock market, and the temporary shift of many tenants from the luxury to the economy class will be an adverse factor in the coming year. On the whole there can be no question that an increasingly large clientele is developing for the finer type of elevator apartments in preferred locations. The year saw the completion of the Brooklyn Gardens Apartments, a small development carried out under the New York Housing Board, and the announcement of a $2,500,000 development on the lower East Side under the same control.

TWO UNITS OF ALDEN PARK MANOR, PHILADELPHIA
EDWYN RORKE, ARCHITECT
The multifamily dwelling goes into the country

dwelling. This in its usual manifestation is a semi-detached two-story four-family, or three-story six-family, flat. As a solution of the housing problem this is not a success. Created expressly to fit abandoned or unused allotments intended for small houses, it is arranged so as to occupy about 40 feet of street frontage; and by elongating itself backward in two rows of awkwardly arranged tandem rooms divided by a party wall, results in the least efficient and worst arrangement for living in that we have devised.

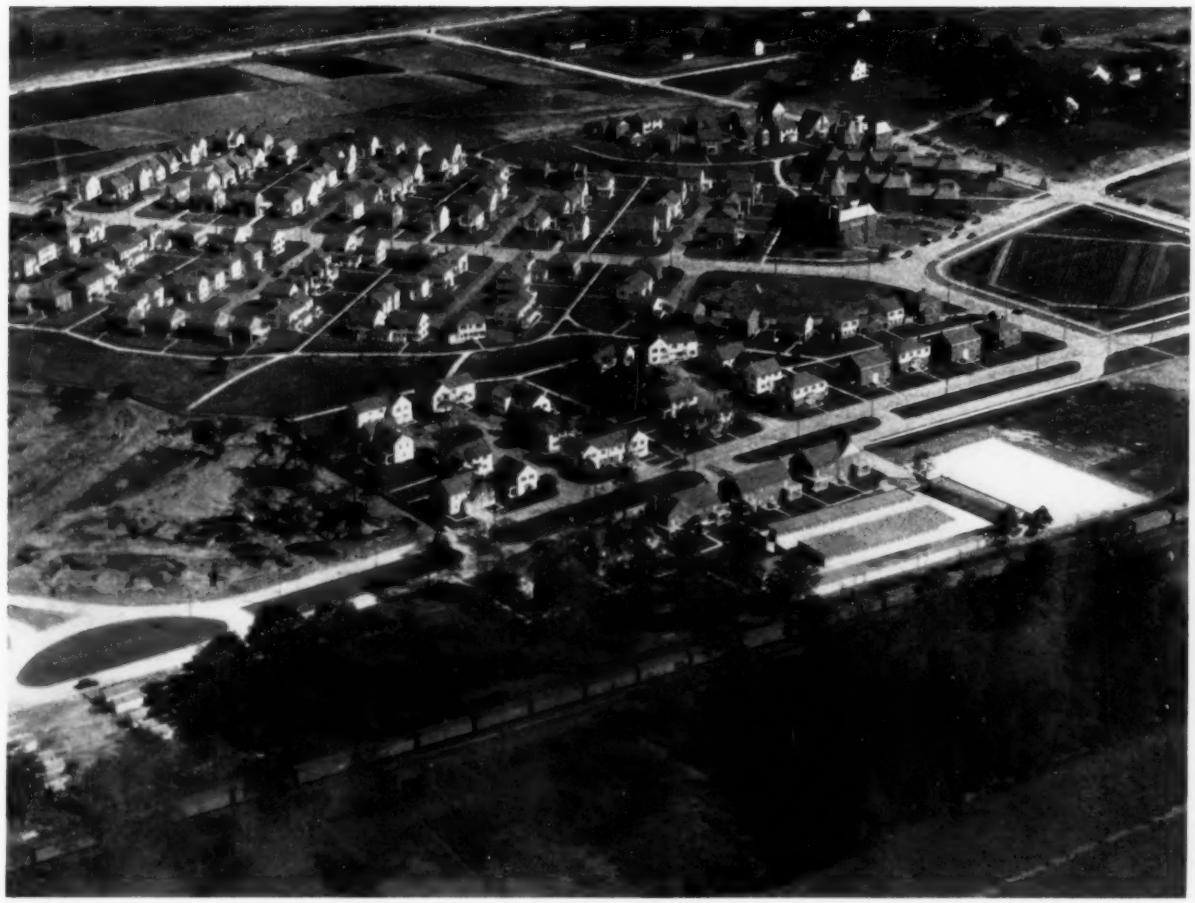
That a form of planning so unimaginative and uneconomical might occasionally occur as the product of meagerly trained builders who construct without benefit of professional planning services, would not be a matter of great surprise. That so unimaginative and uneconomical a form of planning should not only spread in our cities but now frequently be copied in small towns, where no scarcity of land can be claimed as an extenuating circumstance, is hard to credit. Zoning has made valiant efforts to segregate this undesirable type of houses, but has done nothing to suppress it altogether or improve its form.

This "flat" is an apartment with varying degrees of common services. One of its appearances is in a two-story form with a minimum of apartment service (or in Boston, until lately, with no added service in a three-decker: the third-story tenement descends three flights of stairs to tend his hot air heater). In the three-story form it has very recently been supplying a higher class clientele in St. Louis and along the boule-

Aero Service Corp., Photo

ALDEN PARK, PHILADELPHIA

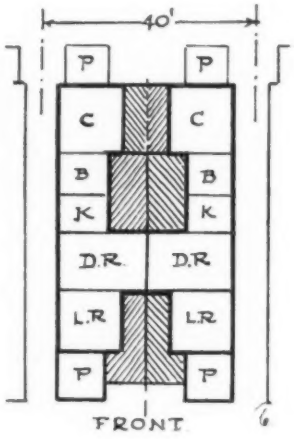
EDWYN RORKE, ARCHITECT



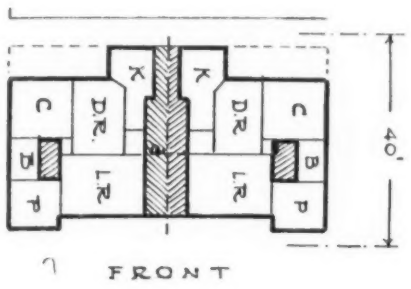
RADBURN, NEW JERSEY, A TOWN LAID OUT BY THE CITY HOUSING CORPORATION
Henry Wright and Clarence S. Stein were associated on the layout and planning of the houses. Some houses were designed by Frederick L. Ackerman, Architect. The apartment house by Andrew J. Thomas, Architect. Here is the apartment house found necessary in a town of small houses

yards of Kansas City, and in other cities of the central states. These cities and more western ones have lately been taking to the equally inefficient so-called "*efficiency*" apartment. It also appears in the outskirts of Greater New York in a variety of forms. Generally in New York the rental suites have heat and hall services supplied by the resident owner, thus reducing the necessity of both front and rear stairs; but thereby losing some of the more homelike advantages of the western counterpart. New York has also evolved a form of two-story eight-family, semi-detached flat with four apartments facing the street and four behind, the latter with the outlook from every window limited to whitewashed light courts ten and fifteen feet wide. This plan has lost the advantage of the last vestige of lawn grass, which had been retained in miniature in previous four-family models. These and other popular forms of tenements in New York have eliminated the last touch of green by paving in concrete every square foot of area not covered by building, from the curb to the rear lot line.

Since between one-third and one-half of our city dwellings are at present built according to some form or other of the foregoing makeshift plans, the architect can hardly limit his mental outlook to those "Master Apartments", which rise above the mass here and there.



At Left: Tandem four-family St. Louis flat
Below: Broad-front St. Louis flat



Above:

The plan at the left shows the St. Louis four-family tandem flat at its maximum extension. The rooms are arbitrarily disposed and arranged with much wasted space. The dining room is too large and the sleeping quarters are too small. The porch is an effort to extend the bedroom space.

The plan at the right is of a house in an adjoining area, demonstrating what can be done to reduce waste area and improve the disposal of an use area equal to that of the first example. The shaded areas in both cases represent waste.

At right:

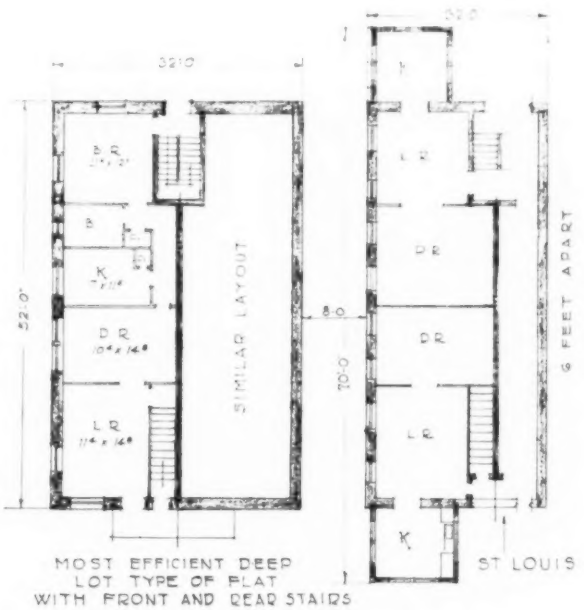
A rather more than usually efficient flat is sometimes arranged for four-room suites in the manner here shown.

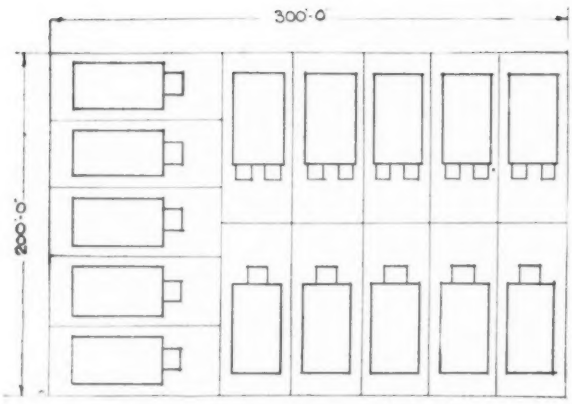
Porches are sometimes added which allow an extension of the bedroom for the needs of small children in the family.

As shown on the right, each pair of buildings is 32 x 52 with eight feet between, a minimum for driveway to garages behind.

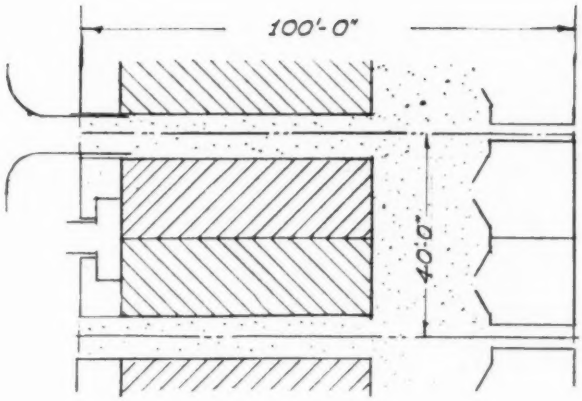
The gross area of each floor is 1,664 square feet of which 1,088 is usable counting the dark end of the narrow dining room as use space. An efficiency of 65.3%.

The front stairs are separated for individual cleaning. The back stairs are used in common to afford access to individual heating plants in the basement. These stairs are expected to take care of themselves, or be cleaned by the resident owner.





The diagram shows one-half of a 600-foot block. With the deep-lot apartments shown at the bottom of the opposite page, this area holds 15 buildings—120 families to the whole block—as compared with 60 houses on 20-foot lots

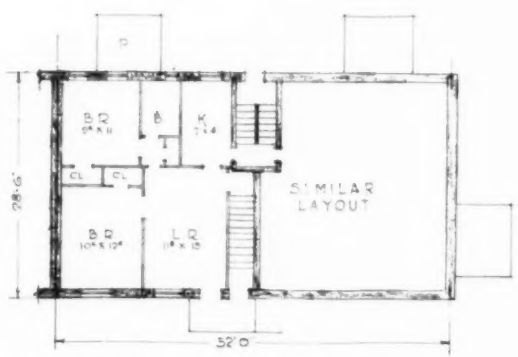


Enter the garage. Two double garages in the rear take up half the "back yard" and concrete paving takes up the rest. The result is that the last vestige of green has disappeared

ARE CONDITIONS FAVORABLE TO MAKING THEM THE BEST POSSIBLE PLACES TO LIVE IN?

We have already trespassed upon our second query. But given just a modicum of encouragement and thoughtful care, the vast multifamily tribe might be evolved into a form of habitation at least passable and economical. Of the deficiencies of the small landlord we are fully aware, and even with the best of planning the individual four or six-family dwelling with resident ownership service is likely to exhibit most of the objectionable features of the larger apartment, while adding those of unstandardized and inefficient management. *Yet the small multifamily building has its place.* It is usually better for the mother with small children, for example, to be no more than one flight above the ground. By an improved arrangement, two-story flats can be given individual yards and gardens (and even basement laundry space) as illustrated in the eight-family flat built by the London County Council. The whole problem is to get a lot subdivision favorable to a broad frontage. The broad frontage at once accomplishes a number of things. The tandem living rooms are squared up into a compact and convenient arrangement, more efficient alike for building and housekeeper. The problems of access are reduced and the yard area may be subdivided for all the tenants. But, above all, the narrow side yards with living rooms looking into neighbors' windows are thus reduced or actually eliminated.

Whereas now, in multifamily sections particularly, but no less in all other forms

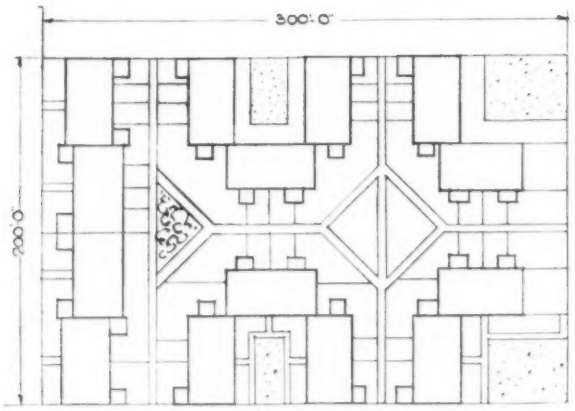


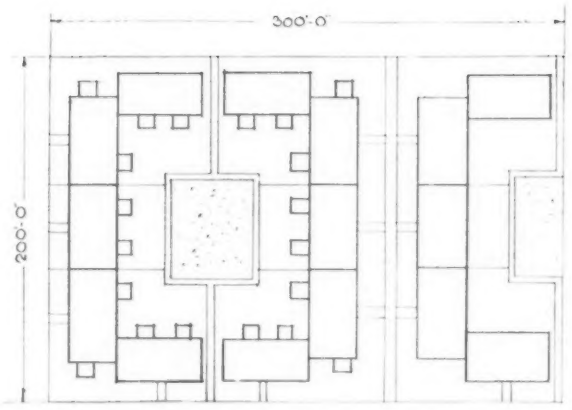
BROAD FRONT FLAT
FRONT & REAR STAIRS
12" WALLS

A broad front flat 52 feet x 28 feet 6 inches provides nearly the same usable floor area as that shown opposite

Grass area 1,450 square feet
Usable area 1,036 square feet, 71.59%

The arrangement of rooms here is also limited. Stair functions have been purposely shown the same as in narrow plan opposite.





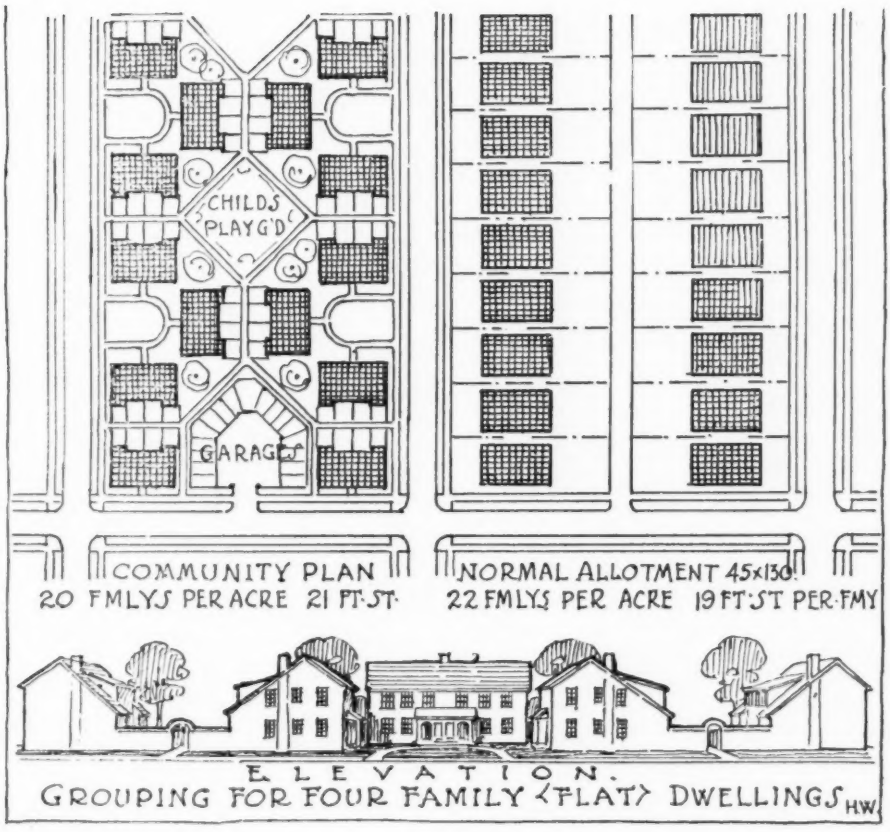
The broad-front plan requires either more land in the usual type of subdivision or a rearrangement of lot lines. When block planning is feasible, it can be grouped so as to use no more land than the narrow frontage types. Narrow side courts can be eliminated, their area concentrated in useful open spaces; and all rooms can have an outlook on spaces at least 35 to 40 feet wide. Two groupings here shown are intended merely as diagrammatic to show the contrast in openness and outlook

of apartments, a fair proportion of rooms have outlook only on courtyards and too often into neighboring windows, it is believed possible and wholly practical *to require and observe without undue hardship a Zone law* which will absolutely eliminate the existence of any room used for living purposes (baths and sometimes kitchens might be excepted, though not necessarily) which does not have outlook at least in one direction upon space ample to assure privacy and excellent light and air. This ideal is not necessarily obtained through a more general use of land but by a rearrangement of lot shapes and buildings of equal or less floor area for the same amount of usable space. To propose new lot shapes may be "locking the door after the horse has flown". But since buildings of this type, like houses, are being built for the most part in groups or blocks at a time, the problem is reduced to one of educating the builder or more directly the financing agencies who should be most interested in the inhumanity of "efficient" planning.

ARE APARTMENTS DOING THEIR PART IN ASSUMING THE RESPONSIBILITIES OF THE CITY?

Confined by restriction to high land values in locations convenient, but often exposed, the apartment building spreads out on its lot, crowds its neighbor, ignores the former building setback line, cuts down the trees and generally makes itself conspicuous and objectionable. Are these habits inherent or accidental? They grow largely from a lack of intelligent assimilation and because of the lack of intelligent adjustment to economic changes. The apartment house *does* require different basic treatment from the house; it does *not* thrive under the same laws. The house is a solid, compact little building, which is set off as far as possible from the lot lines in all directions. The apartment house is too large in bulk to be efficiently planned as a solid mass, and requires internal courts. The larger the court, the more effective and efficient the plan (See ARCHITECTURAL RECORD, March, 1929). Consequently the normal house lot cannot afford favorable room for good apartment design without encroachment upon the prerogative of the neighboring house. But the requirements of the apartment are such as to be met by a little forethought in planning the community, at the outset, for all the various forms of dwellings which have been found by experience to be required.

As to whether the apartment contributes



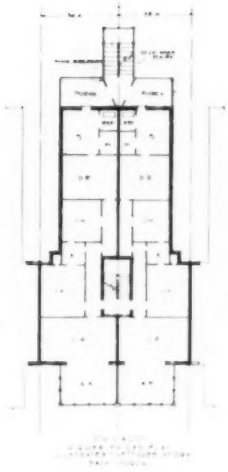
Another way of rearranging individual houses so that wasted space is converted into playground, and windows no longer look straight into one another as with upper right

its full share or not toward the revenues, the responsibilities, and the life of the community, there is a wide difference of opinion. The actual results depend largely upon the character of the community and its method of taxation. It is alleged by some that the apartment house either does contribute or can reasonably be expected to contribute proportionately more to the tax budget than the house. The issues are confused by the present temporary situation in which the low proportion of school children from apartment families raises an unduly favorable balance in their favor. But granting some equalization of this factor, the apartment house as compared with the individual house does not require anything like the proportionate amount of public services, represented in the provision and maintenance of the street and utility distribution plant of the city. Even though the individual building requires a wider street and ample parking space, whether on or off the street, these requirements are by no means equal to those for the *same number of families* in single houses, facing the street in the usual conventional manner. There is suggested here the possibility that smaller houses be arranged in courts so as not to require the extravagant street area of the conventional suburb. But as things stand, it seems fairly certain, that, in the present suburban community comprised of a fair proportion of apartments and of single houses, the apartment does carry, or should be able to carry a larger share of the municipal load than is chargeable to its immediate surroundings.

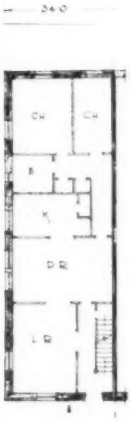
This might be illustrated by considering a possible change in the composition of Washington, D. C., which now* houses 1/6 of its population in apartments (mostly moderate size, but few small multifamily type) and 5/6 in single family dwellings. The occupied space is about 5,000 acres, of which 275 acres or 5½% are occupied by

* Statistics compiled in 1926.

NEW YORK



CHICAGO



NEW YORK

New York still allows a six-foot side court and sometimes tries to divide the seventeen-foot half-building for an extra hall bed. Wider plans are also used. A single stairway is customary; sometimes arranged for access from the second floor to the basement. The second floor is an apartment with heat furnished. Deliveries come through the front stairway

Chicago has numerous variations either as flats or apartments but almost universally with rear outdoor service stairs and wooden porches. Side yards in some cases run through; in others, buildings are carried to lot lines with interior light courts. Three-story buildings are the rule in this city; all buildings over three stories must be fireproof construction and are consequently for the most part better arranged on adequate lots

apartments and 94½% by houses—all with approximately the same requirements per acre of street area, improvement and maintenance. If the city were to be altered to comply with the proportions represented in the new buildings generally, i.e., 4/6 apartments and 2/6 houses, the total area occupied could be reduced by one-half and yet leave more generous space for the apartments. The costs of all public services could thus be reduced at least 40%.

DOES THE CITY ASSUME ITS RESPONSIBILITIES TOWARD THE APARTMENT?

It is not to be thought of that in accepting the new conditions imposed by a growth of multifamily dwellings to two-thirds of the cities' housing needs, we should take advantage of a proportionate reduction in public facilities required, by confining the apartment to its present cramped quarters, or by tolerating the present inadequacies of jammed traffic and lack of parking conveniences.

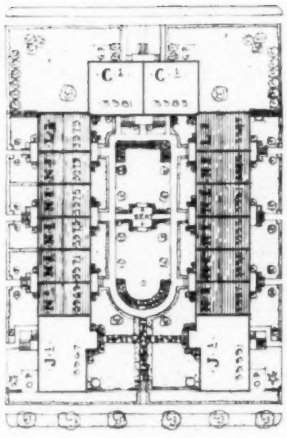
The apartment house is more or less directly the product of the automobile. Although we had early hopes, still cherished by some, that the auto by its superior individualized transportation would bring about a far-flung movement, strengthening the previous suburban trend and making every man the lord of his own castle, it has so far been disappointing in results. In the first place, it takes so much more than merely houses to make a community, that unlimited transportation possibilities are only one small factor in a complicated whole. Again the auto has tended to foster ease, independence and luxury as represent-

ed in the service of the apartment, as opposed to the responsibilities of the individual house. Most families compromise by using their car to go to the country on an occasional joy ride, but live in the apartment to meet the demands of schooling and to enjoy the other cultural advantages of the older well-knit community.

The apartment house not only does this now, in its limited way, but has potential possibilities of evolving with proper nurture into a highly desirable form of dwelling for many people. It is perfectly capable of forging its own way—even of subsidizing to a limited extent the greater service requirements of the single house in neighboring areas, and yet of yielding a surplus tax value sufficient for more adequate site and for more community requirements than have yet been realized.

GIVING THE APARTMENT A REAL PLACE IN THE COMMUNITY

It is therefore here proposed, for the sake of a modern approach to city planning and zoning, that since a ratio of two-thirds to one-third is a fair probable proportion of apartments to houses, we relinquish our personal predilections in favor of a single-family house long enough to discuss what ideals of planning are *attainable*. In other words, we ask the advocates of the benefits of the single-family house, of whom the writer is one, as well as that important group of realtors whose commercial interests are involved, to *stand by* while we throw a picture on the screen, which, to be sure, may lack some of the romantic aspects of home building, but may compensate by improving the prospects of a large and growing proportion of our city dwellers. In short, we propose to apply the useful arts of City Planning and Zoning; the economics of the use of land and of public facilities; the modern building technique; and some imagination freed for the moment from the complications of inherited custom and the restrictions of the patchwork building code, for a basic organization of the physical layout of the City. (*Continued on page 222*)



So-called *Cul de Sac* groups of houses were built at Sunnyside Gardens, L. I., running through from street to street, but facing toward the restricted part of the community

In these groups there are single and multifamily houses of varying sizes. They have been popular as dwellings purchased and individually owned; and the privacy and freedom from the noise of the street has made the interior units even more sought after than similar houses with street frontages. Community garage in separate plot

Photo. Wurts Brothers

VINCENT ASTOR APARTMENTS, NEW YORK CITY

CHARLES A. PLATT, ARCHITECT

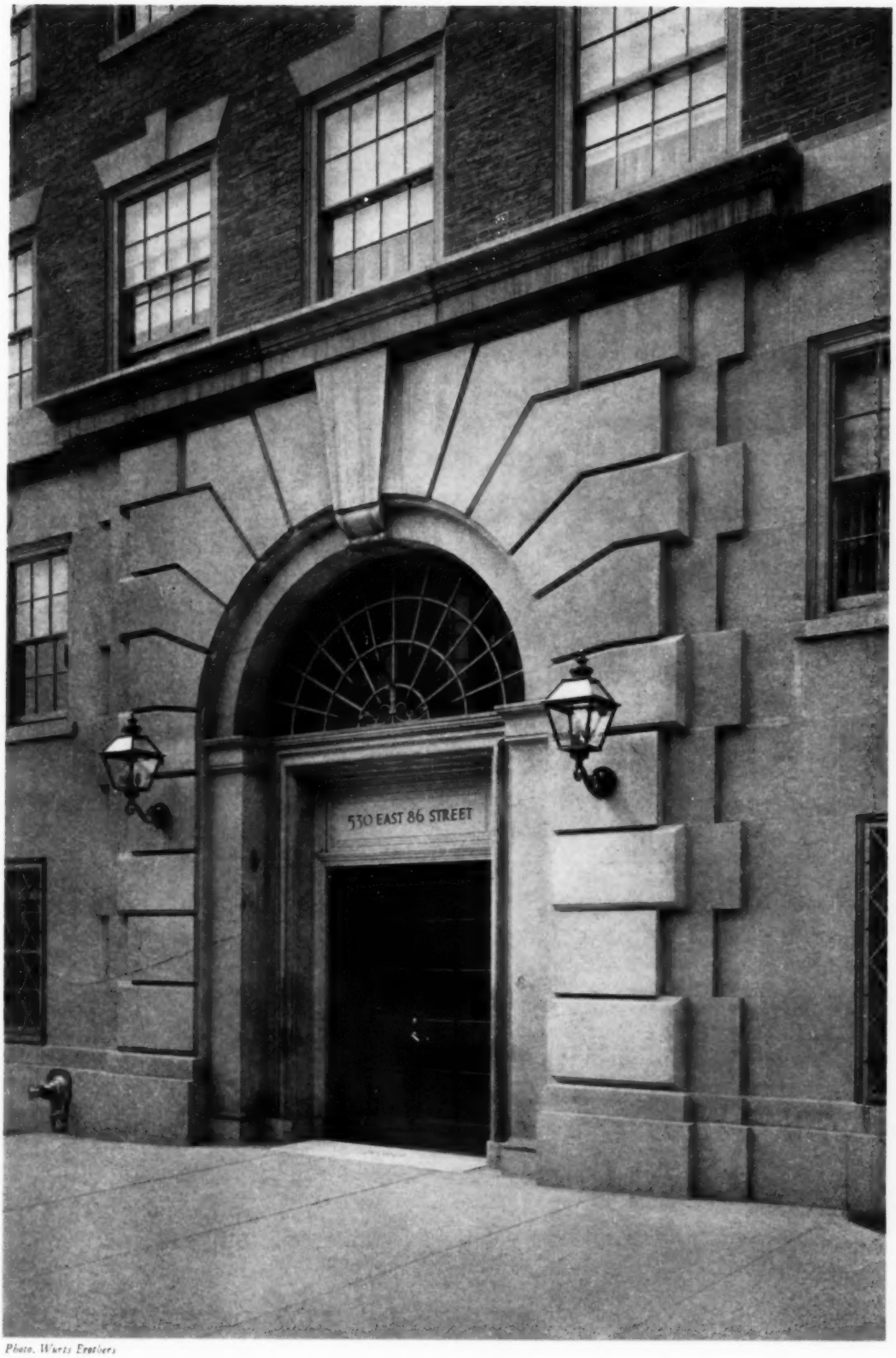


Photo. Wurts Brothers

ENTRANCE DETAIL

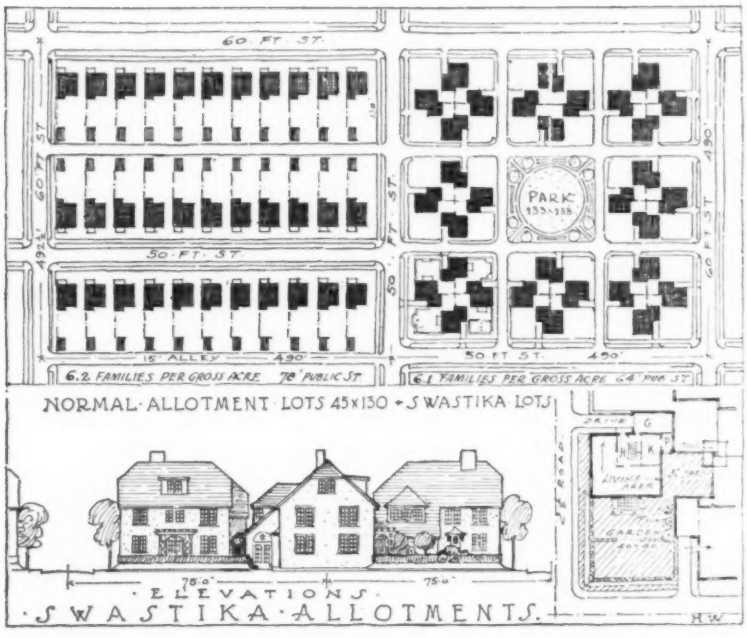
VINCENT ASTOR APARTMENTS, NEW YORK CITY

CHARLES A. PLATT, ARCHITECT

ATTAINABLE IDEALS

(*Continued from page 219*)

It is a simple matter to pass on from these easily demonstrable improvements in individual or group planning to an ideal city in which every part takes its place in an orderly and efficient manner; and even as a mental exercise, such flights of fancy have their value in suggesting an eventual goal. However, with individual interests in land ownership, it behooves us to look first to the more readily attainable ideals to be gained in the group or block unit.



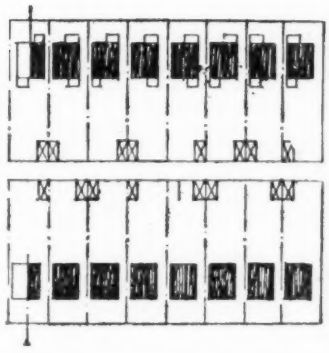
SWASTIKA HOUSE PLAN

Contrasted with normal detached houses in rows—note gain for eight units sufficient to set aside one square out of nine as open playground.

This simple Swastika arrangement, suggested by the author in the *A. I. A. Journal*, gains full use of this open area. By a more elaborate road plan it provides access to individual garages which might be alternately solved by neighborhood grouping of these facilities.

We may begin with the normal single-family freestanding house, which although it demands an extravagant land area—50-foot lots, five families per acre, or 8,300 square feet—is yet an offender against the fundamental principle of mutual non-interference. Ranged in soldier-like rows immediately exposed to the unpleasant noises and the confusion of the street, it enjoys the close proximity of neighboring windows and radio programs, while its open space, though large in quantity, is poor in quality, and ill-disposed with relation to the living area of the house.

ATTAINABLE IDEALS



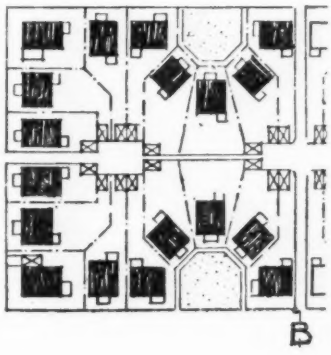
Intermediate variations which do not go as far afield as the Swastika Scheme may be devised in which a given number of "soldier-course" houses, in blocks of 250 to 300 feet deep (a standard found in many western cities), may be slightly rearranged in any individual lot basis and yet gain the following advantages:

(a) Broader fronts for a fair proportion of lots, permitting variety in house plan.

(b) Use of end street as well as side street frontage, improving the usual ragged appearance of cross streets looking into rear yards and dismal alleys.

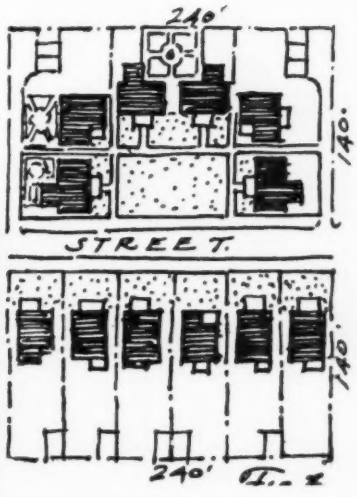
(c) Grouping of garages located either on or adjoining individually owned lots.

(d) Opening up side outlook and reducing interference of adjoining windows and services.



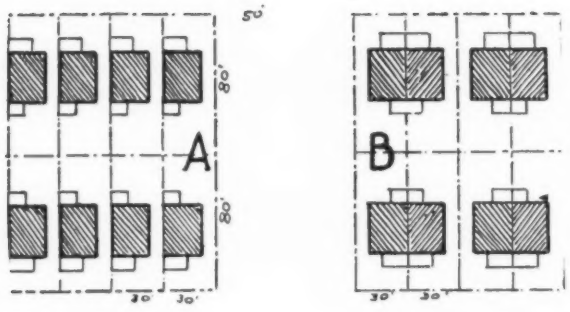
The result of grouping for mutual open space and non-interference is demonstrated by the delightful group of six houses at St. Martins, Philadelphia, designed by Edmund Gilchrist, Architect

Houses placed in soldier-course relation on 40-foot lots are contrasted with this group. The provision of garage sites on the premises is not made in the actual development at St. Martins, but shown to illustrate possibilities of the plan

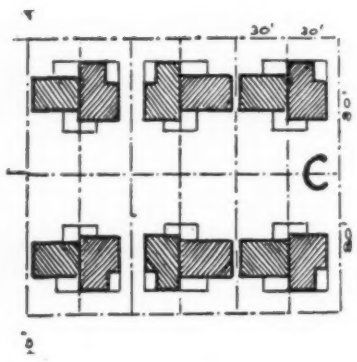


HOUSES AT ST. MARTINS
PHILADELPHIA
EDMUND GILCHRIST,
ARCHITECT

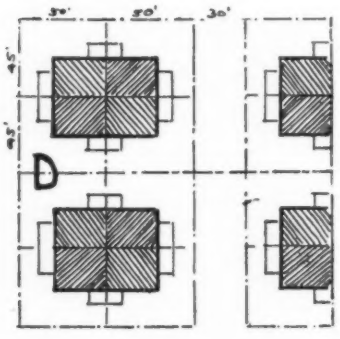
ATTAINABLE IDEALS



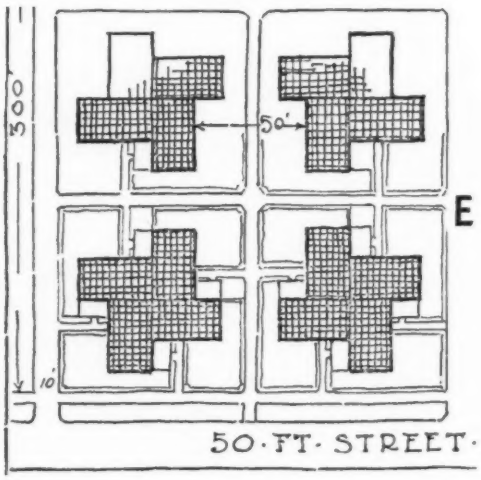
The first step in single house economy lies in the double or "semi-detached" single party-wall house. This enlarges or pools the side yard area. It at once encounters the difficulty of all forms of attached dwellings and apartments in the matter of noise passing through the party wall. Here we must look to the technical engineers for relief, since we have what constitutes a universal defect for all dwellings economically suitable to urban requirements



Once the party wall has been admitted, further savings in land area are attainable (C) with less mutual interference than (A) and yet affording exterior variations not only interesting but marking the individual ownership more readily than in the stereotyped (B) plan. This short group plan was the basis of the Shipping Board War Village and is being extensively employed in Washington, D. C., where a special zone district has been provided for such house



A grouping of two party walls in a four-family unit was first used at Essen, Germany, and later extensively by Architect Flagg in one of the War Villages, also in Philadelphia for some more expensive houses. It has the fault of eliminating all cross-draft



A better, though less efficient variant is to be found in the attached Swastika (E) made up of the same size houses as (D), slightly altered in shape. This scheme of plan for the double party-wall house requires half the amount of street and about two-thirds as much land (1,920 square feet) as the detached houses on 30-foot lots (2,400 square feet)

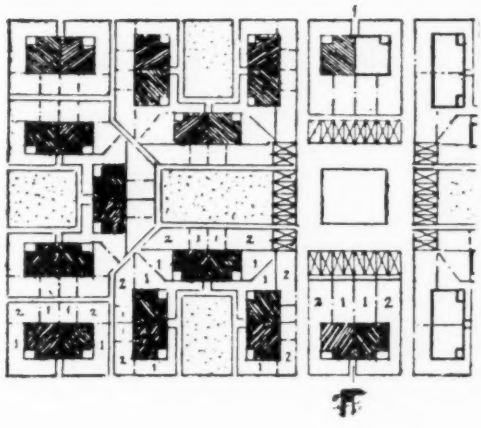
GROUPING OF SINGLE-FAMILY HOUSES AND TWO-STORY FLATS, BRIDGEPORT, CONN.

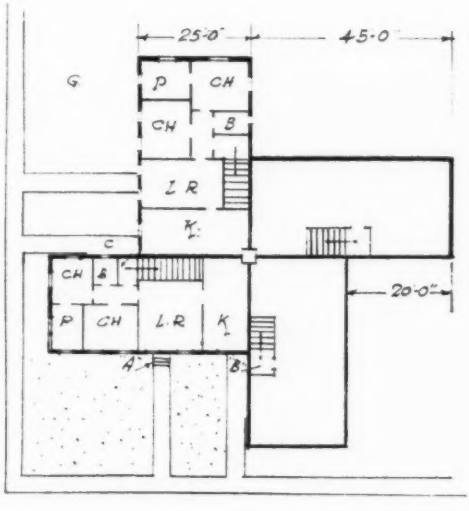
R. CLIPSTON STURGIS AND A. H. HEPBURN, ARCHITECTS

ATTAINABLE IDEALS

Passing on to the multifamily house we have already shown the possibility of regrouping these so as to avoid all cross-vision interference as well as to provide access to individual clothes yard for each of the four families occupying the building. Here again a more radical departure may be suggested by means of the Swastika with the following advantages.

Although it enjoys the economies of a double party wall and a shingle heating stack for eight dwellings, two-thirds of the perimeter is exposed with unlimited outlook, light and air—only the stairs, storage room, and one side of the kitchen are thus affected by the party wall, while all living rooms are insulated from noise interference. Entrance to the second floor dwelling (B) is had along a wall in which the first story has unimportant high windows for a bath and one side of a corner bedroom. Under present forms of construction the relations between the first-floor tenant and his second-floor vertical neighbor are sometimes strained. This tension is obviated to some extent in this plan, since the second-floor dweller over first floor entering at A enters at C quite removed from any contact with A, while B entering nearby remains a friendly neighbor who does not annoy A with the reverberations of his particular radio outfit.

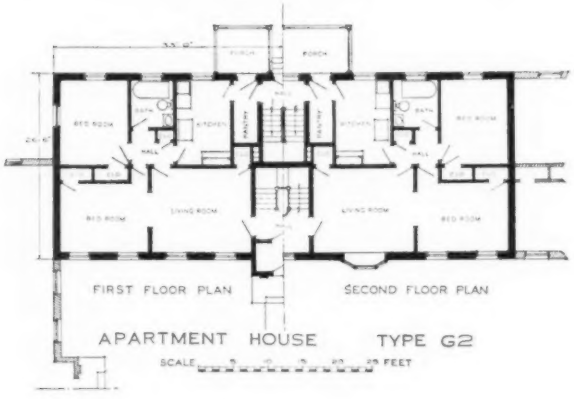


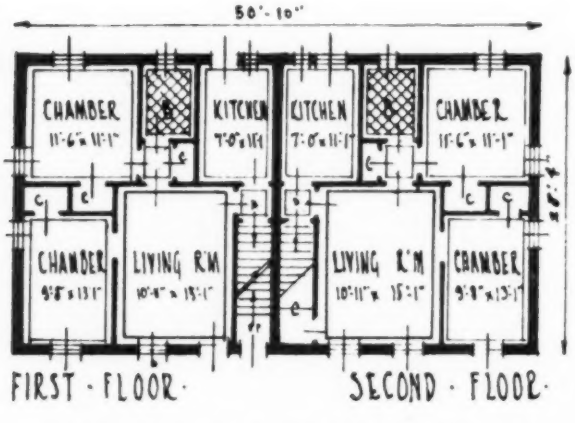


APARTMENT BUILDINGS AT BRIDGEPORT, CONN. FOR U. S. HOUSING CORPORATION

R. CLIPSTON STURGIS, ARCHITECT

(Plan below)





APARTMENTS FOR CITY HOUSING CORPORATION, "SUNNYSIDE," LONG ISLAND

CLARENCE S. STEIN, ARCHITECT

ATTAINABLE IDEALS

Passing on to the three-story flat, a type of dwelling resorted to in many large cities, we find the conditions aggravated by crowding of deeper building plans on narrow lots. The same readjustment of site relationship applies here as in the two-story building. In fact the only difference between these buildings in normal use is in the conversion of stair space occupied in the flat by two single-run individual stairs into a single double-run stair with landings. The improved Sunnyside Gardens flat with broad front provides two four room suites on each floor in a space 50 feet wide by 28 to 30 feet deep. In the three and four story apartments built in this same development, the plans are practically identical except for the rearrangement of stairs and substitution of dumb waiters for rear porch entrances.

A broad front plan based upon the same principles was used by the Shipping Board developments as a two-story flat, while at Bridgeport, the U. S. Housing Corp. adopted a similar plan for three-story flats built in recessed courts and other grouping which afforded a non-interference open relation at a land area of about 900 square feet per family.

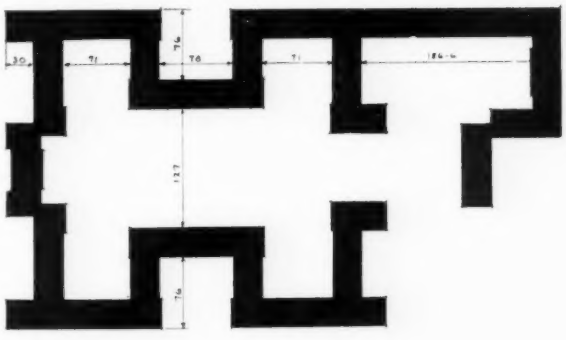
MICHIGAN POULEVARD GARDENS, CHICAGO

E. H. KLABER AND E. A. GRUNSFELD, ARCHITECTS

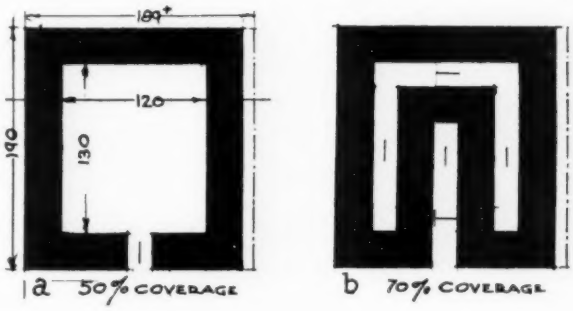
Characteristics of Apartment Design

The foregoing multifamily types are at best the least desirable forms of habitation. If the drift is definitely away from the single dwelling it is also fortunately toward the larger types of apartment. Such are, however, a mere extension of the flat, either vertically or in groups of a size necessary for efficient service.

The same principles of plan should apply as in the flat. Apartments should be two rooms deep extending laterally from each stair or elevator unit. The more simply and directly this is accomplished the more efficient the building is likely to be. As noted a year ago, the best results are obtained from a perimeter building with ample courtyard. (Filling in the court with more building complicates the design and usually adds more building cost than is saved in land cost. If blocks are somewhat deeper the perimeter may be extended by means of re-entrant courts which, if turned toward the main thoroughfare, will reduce the number of rooms facing directly on the noisy street.)



RE-ENTRANT COURT PLAN

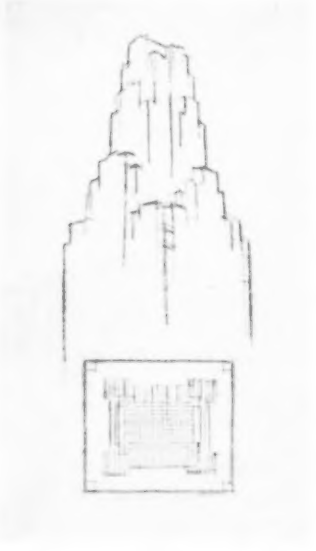


Placing the Apartment

Since from one third to one half our city population will, according to present trends, see apartments of one kind or another, it is proper to consider how we can provide the most suitable conditions for their accommodation. While the apartment dweller probably likes noise no more than his housekeeping friend, he requires a prominent and convenient location and his larger united drain upon utility services suggests that apartment blocks shall border the main avenues and surround the unit cells of the city, just as the individual apartment building surrounds the perimeter of its block. Here the principle again acts to afford so large a capacity in this perimeter that there is no need of continuing apartments in the interior of the unit cell, in fact a standard of apartments only one block deep on each side of broad avenues not only corresponds roughly with what is taking place, but also gives an ample capacity to the neighborhood for all ordinary requirements. This plan has the advantage that no building more than two stories in height need be built without an outlook, either over a broad avenue or an adjoining block of low structures. The principle is identical with the arrangement shown on page 233. In a city unit cell, one-quarter mile each way, bounded by broad avenues, the first tier of blocks 200 feet deep will furnish 7,400 feet of frontage or 814,000 sq. feet of building area. The remainder or the block, 645 feet square, even if divided into three blocks will furnish only 3,870 feet of frontage, or 351,000 feet of building area. What a pity then to crowd this central core full of tall buildings, adding less than 40% to the available building area and reducing the desirability of both the perimeter and the center properties. Better to extend more apartment locations along the main avenues, where utilities and convenience exist.

Set Back Skylines

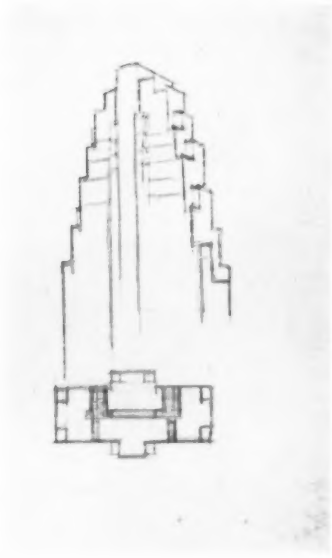
Before getting into the design of streets suitable for apartments, it may be well to give some consideration to the *design and efficiency of elevator apartments*. The fact that New York, with its excessive land prices, has set the standards of apartment house design, has lead to a misconception that New York apartments are efficiently planned. But where a city does provide sufficient and proper sites for apartment building to prevent land monopolies in a few desirable locations, vast improvements may be made in their planning and setting. Excessively high land values tend to cover inefficiencies of building cost. Buildings are forced up into the full limits of a too generous zone "envelope". Although this may bring about a picturesque interest in the favored upper stories, the set-back building, which has worked fairly well for loft buildings and hotels, is neither favorable nor logical for dwelling type apartments.



Too generous an "envelope." A dark unusable mass inside

The small number of efficient and desirable upper suites does not compensate for the large amount of dead space which supports the upper pyramid. A well-planned apartment hotel on a large corner lot may warrant a square plan in which only about 45% of the area is available for daylighted

rooms. The remaining area may be devoted to artificially lighted bath rooms, serving pantries, foyers, halls and elevators. But a slice taken out of the middle of such a structure will contain nearly as much area suitable for family apartments.



Equivalent to a slice through the building shown opposite. Appropriate for apartments

Where land values will permit (as would be the case in cities making ample provisions for apartment sites) the application of the set-back could be made to the lateral spread of efficient two-room deep apartment buildings. Just to test the adaptability of this principle, the accompanying sketch has been made of a sixteen-story apartment with two elevator units serving 36 apartments or 170 rooms each.

The practicability of the service elements of the design is not important in this connection; the plan is made primarily to show the possibility of receding set-backs securing open balconies for two out of every three lateral apartments above the fourth floor. These buildings particularly adapted to the corner locations in the following study of an integrated city plan suggest the possibilities of design under conditions and land values favorable to efficient planning and grouping of such buildings.

But cities are demanding other changes besides improvements in dwellings. *Through traffic* demands wide arteries in which it can flow uninterrupted. We propose, then, a new type of wide artery for apartment frontage particularly designed to help traffic flow and yet improve the comfort and convenience of its border properties. The city of unit cells surrounded by broad avenues, is detailed elsewhere. By a redistribution of street space, just as we have redistributed open lot space, the wasted width and pavements of minor inner-cell streets is transferred to help provide amply wide perimeter or arterial streets. This process alone provides more than half the extra space needed to make half mile (3,000-foot) arteries (on which all our elevator apartments are to be located) 150 feet wide with 350 diameter circles at their intersections. These street areas are used as follows. The 150-foot avenue has a 44-foot center uninterrupted traffic-way bordered by an 18-foot grass strip with a double avenue of trees and hedge lines at curbs (such uninterrupted four lane streets with proper intersections and entrance valves will carry more vehicles per hour than the most crowded streets in the world today).

The remaining 35 feet on each side are used for a 25-foot wide local access street and a 10-foot walk way. Through traffic cannot proceed more than 1,200 feet along these side streets and therefore will avoid them, reducing noise and danger to a minimum. The center traffic way is to be depressed about 3 feet which, with the hedges and trees, and a distance of at least 60 feet to the nearest building, will eliminate much of the noise and conscious view of the fast traffic. It will also permit relatively low overpass footways.

The 350-foot intersection circles provide space for elimination of grade crossings with the same *cushion* of side roadway as in the avenue. Thus the tall buildings, (6 stories) on the avenue and the extra tall buildings at the traffic circles enjoy the

effect of broad open spaces on the street side with a minimum of the present noises from such arteries.

In order to provide for grade elimination at the intermediate quarter-mile 80-foot street crossings, the avenues are to be carried on a level generally 8 to 10 feet higher than the natural surface and the general grade of the 80-foot streets and the streets in the unit cell interior. Apartment frontages are therefore 8 to 10 feet higher allowing the court yards and space toward the interior of the unit to be converted into garages, the roof of which provides play space for nursery schools, tennis courts, and the like. Parking capacity for visitors' vehicles is provided for in special spaces behind the curb line.

Typical Apartment Block Design

Three types of multifamily perimeter blocks, interchangeable in shape and size, are shown on the detailed unit cell plan on the double page spread.

(1) One hundred and thirty dwellings in thirty-two 2-story four-family flats grouped so as to have individual yards for every family, two garage courts and three playgrounds. These are shown next to the 80-foot delivery highways and so arranged that except for two buildings set 15 feet back, the end-rooms only of four flats out of twelve are exposed toward the traffic street.

(2) One hundred and thirty-two flats in three-story six-family buildings, based on Bridgeport. These taller buildings are less crowded and provide space between for subgrade garage units and nursery school yard.

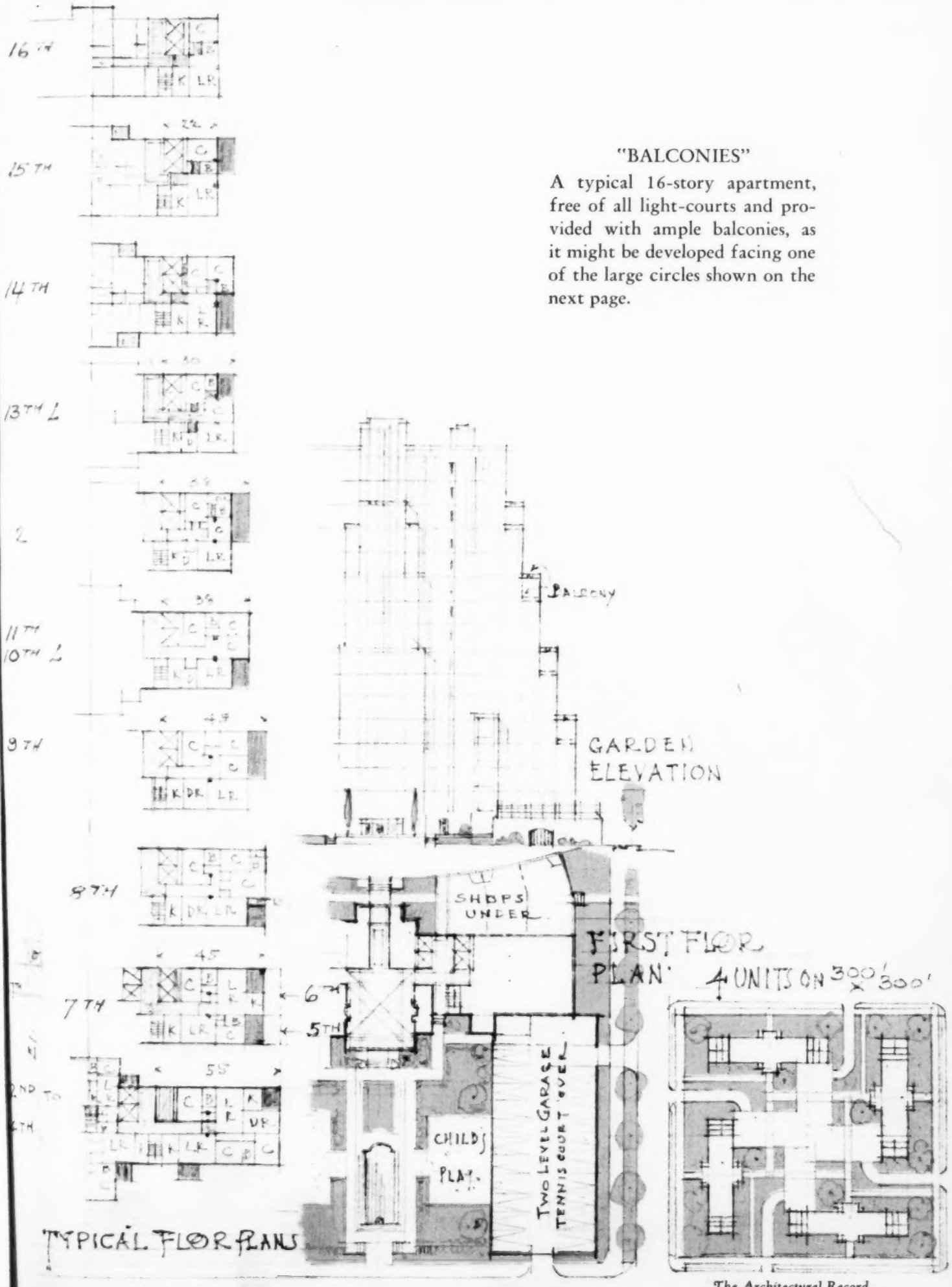
(3) Six-story twelve-family elevator apartments: 202 apartments with re-entrant courts and forty 3-story apartments off the inner street.

Finally, the 350-foot traffic circles have at each corner one sixteen-story building of seventy-six apartments and two 6-story with twelve apartments each, or 400 apartments for the four corners. Thus the quarter-mile unit cell—*not as shown to illustrate all types*—but with two-story flats on the 80-foot streets and six-story block on the avenues, would have 356 flats and 500 apartments in the perimeter blocks besides three corners of 4,800 square feet each devoted to churches and clubs on the avenues, and stores at the intersection of the 80-foot traffic streets.

The central space may be occupied with 116 single-family houses making a total of 972 families, or may form a fifteen-acre park convenient to 856 families in the perimeter blocks; or to compensate for the park the four groups of three-story flats in each six-story block if raised to six stories, would provide 182 more apartments or 1,038 for the unit. The unit as drawn is 1,500 feet square, instead of a quarter mile (1,320 feet) and contains 51½ acres, which is slightly over nineteen families per acre besides including space for fifteen acres of park as well as stores, clubs, churches, garages, primary schools and playgrounds.

THE RESIDENTIAL CITY

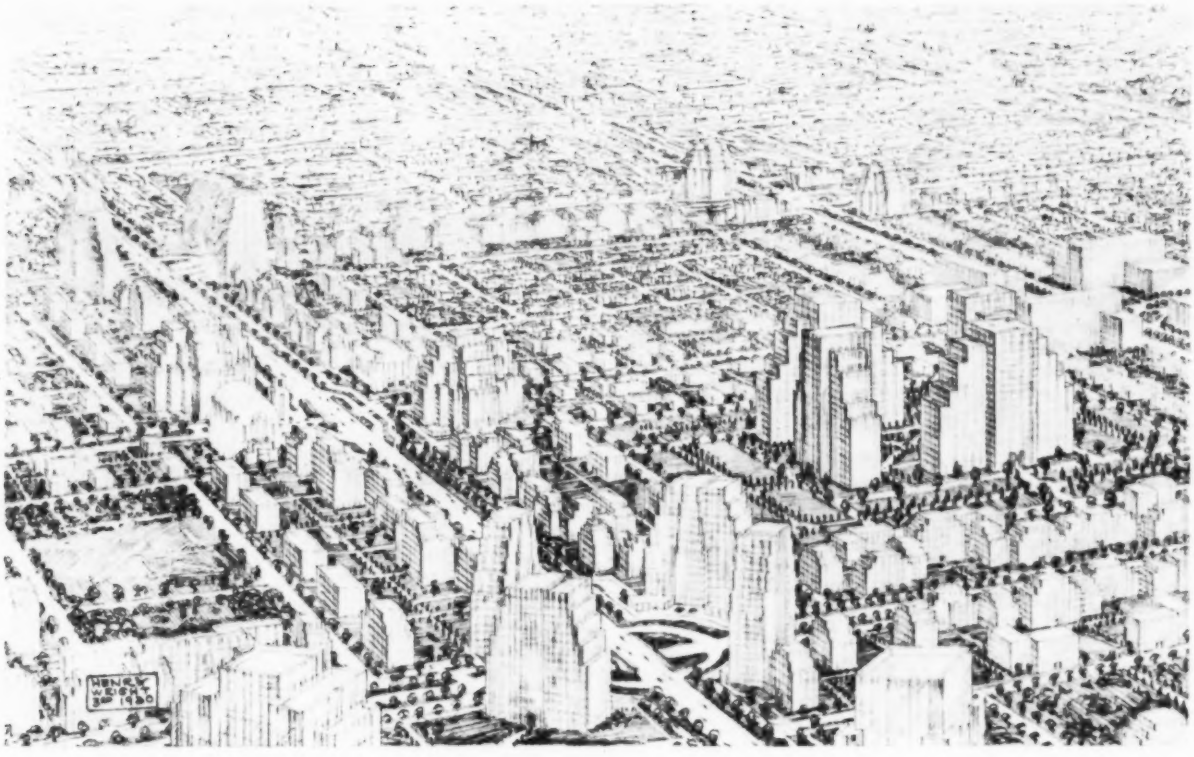
The purpose of carrying on from this point is not to offer a developed method of complete City Planning, but rather to test the adequacy of the principles indicated in the foregoing study for the larger living areas of the future city. Although such an all-residential unit might conceivably be possible as an actual portion of a larger regional city, its purpose is diagrammatic only. A 3-mile square is divided each way into five 3,000-foot squares or 25 units of types here illustrated bounded by 150-foot avenues. Five units are devoted, one to a central business area and four to parks, one each at the corners. These parks with the local park areas occupy 25.7% of the area of the city; central business 4%; leaving 67% or 6.03 square miles of residential property. This is approximately equal to one half the area occupied for residential purposes in two or three known cities of 400,000 to 500,000 populations, though those cities are spread out over a total thirty to forty square miles.

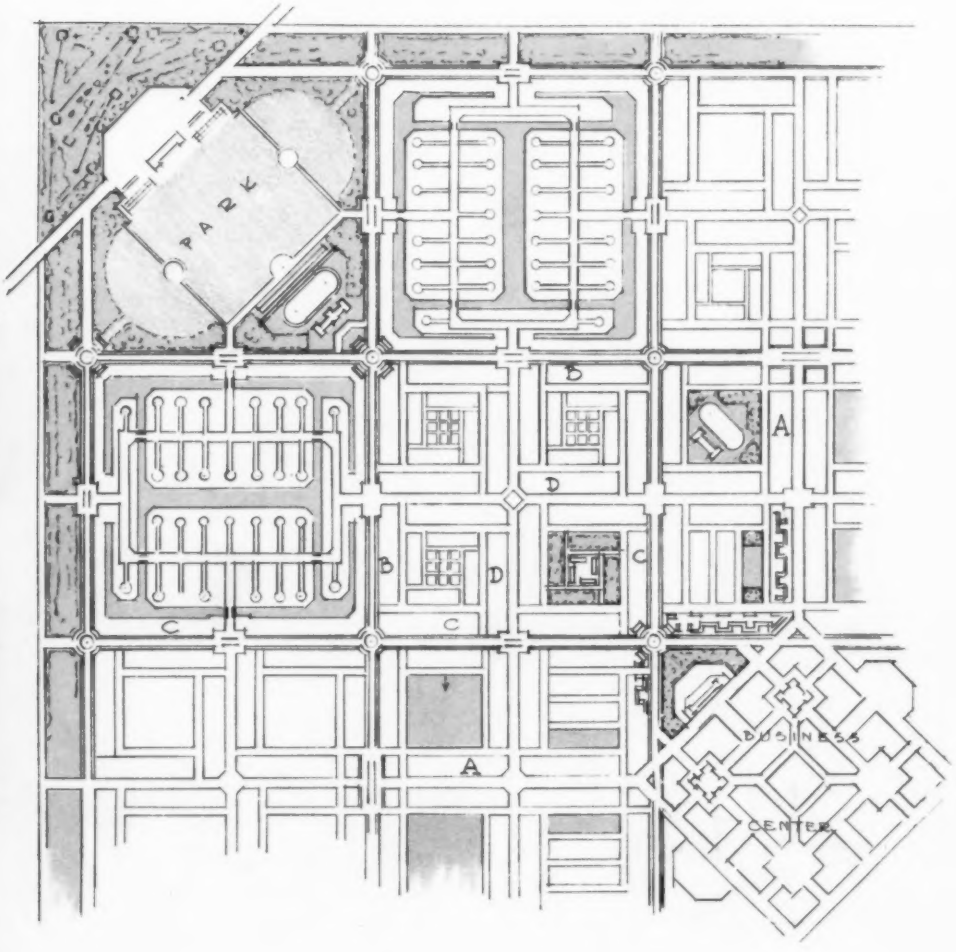


"BALCONIES"

A typical 16-story apartment, free of all light-courts and provided with ample balconies, as it might be developed facing one of the large circles shown on the next page.

A RESIDENTIAL CITY



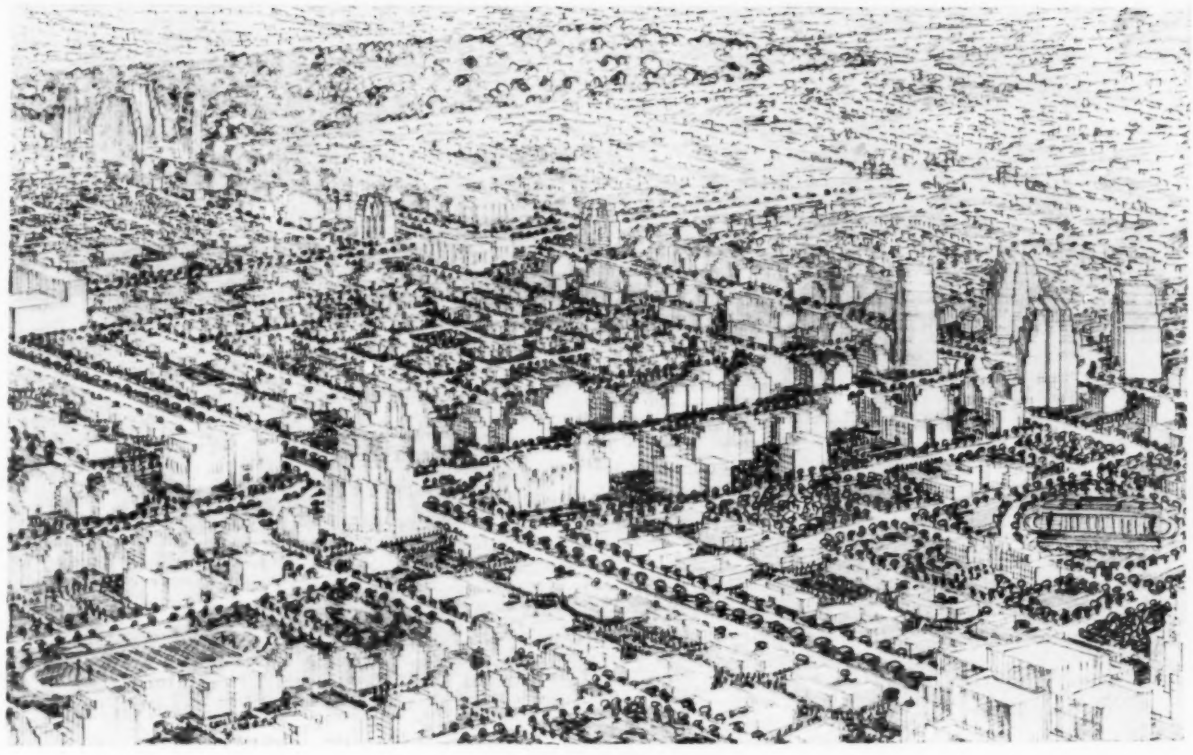


A reorganization of forms and areas of streets and buildings as now given, so as to meet an attainable ideal of universally open and non-interfering dwelling structures, using the types shown on previous pages in detail.

Above: Air view.

Left: One quarter of a three-mile square city. The city as a whole is shown on page 234. *A*—streets radiate from the Business Center; *B* is a main boulevard circuit; the *C*—streets divide the city into unit cells of 3000 feet each.

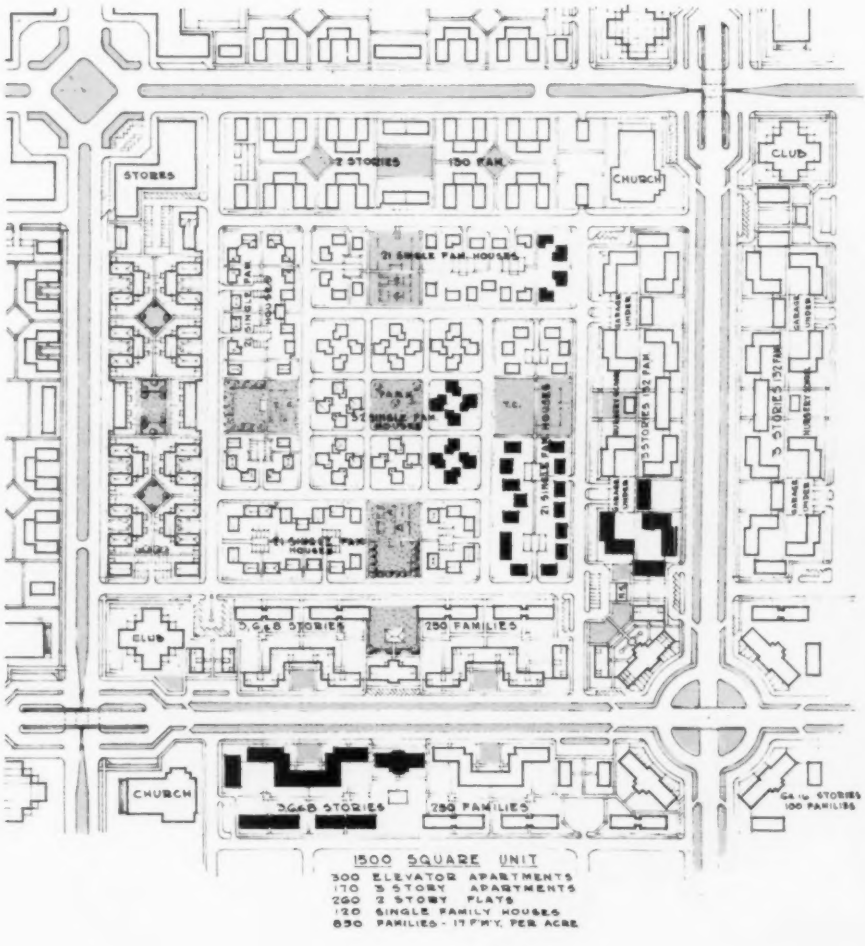
Right: One quarter of a typical 3000-foot unit cell.

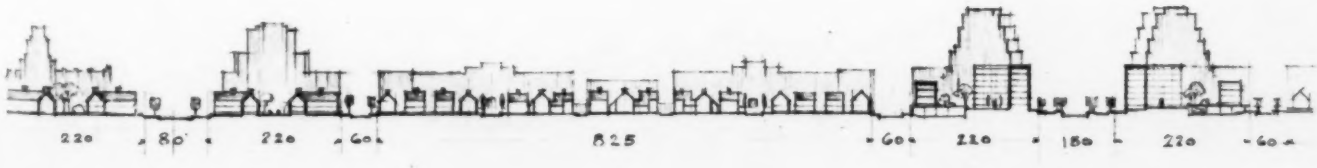


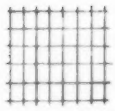
AS AN
INTEGRATED
ORGANIZATION

In this organization a rational balance is attained between public utilities and private land use controlled by accredited constructive limitations. This permits an elastic unit adjustment to the demands of special requirements imaginatively developed.

The complete three-mile city is composed of eight interior and twelve suburban residential unit cells. At right is a detail showing one quarter of such a unit cell, made up of all the types of housing shown on previous pages.

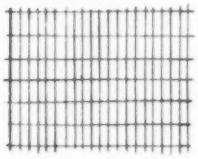






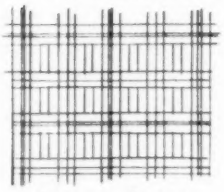
STREET SYSTEM 3

MOST WASTEFUL SHORT BLOCKS



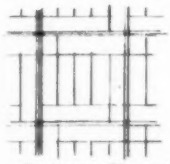
DETAIL GRIDIRON

BETTER GRIDIRON SYSTEM SPECIAL STREET EMPHASIZED



SCOTCH PLAID STREET SYSTEM

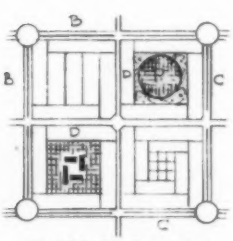
SCOTCH PLAID DETAIL



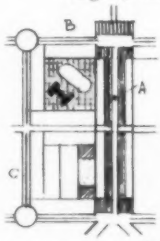
SAFETY FEATURE INTRODUCED

SAFETY STREET SYSTEMS

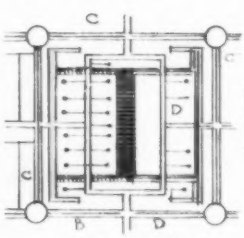
NOTE: Practically the same street area has been maintained thru out, the savings in the final scheme make possible an increase of width of 'C' from 80' to 120'.



3,000 FT. SQ. UNIT 4 TYPES SAFETY CELLS.



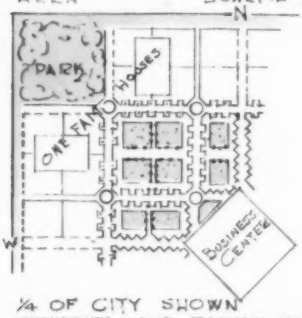
BUSINESS UNIT 'A' ST. SCHOOL & PARKING CELLS.



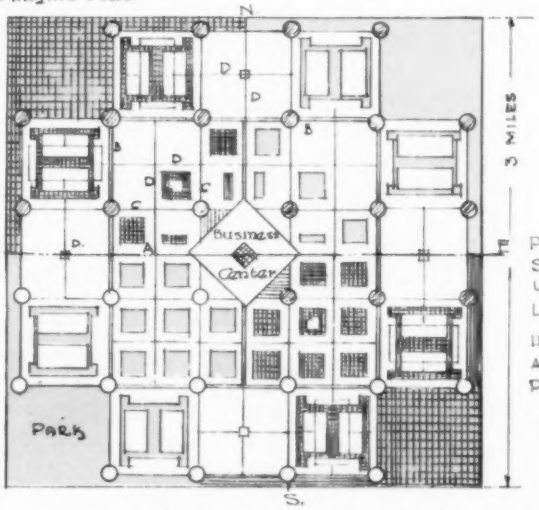
'RADBURN' INNER BLOCK

ENTIRE RESIDENTIAL AREA MADE UP OF ONE OR ANOTHER OF THESE UNITS.

¼ OF CITY SHOWN WITH ONE FAMILY HOUSES IN CENTRAL AREA SCHEME 'X'



¼ OF CITY SHOWN WITHOUT ONE FAMILY HOUSES IN CENTRAL AREA SCHEME 'Y'



PLAN OF 3-MILE CITY SHOWING OPEN SPACES UPPER HALF AS SCHEME 'X' LOWER HALF AS SCHEME 'Y'

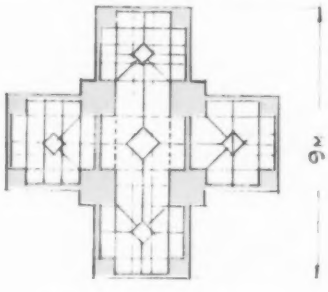
HOUSES WITHIN BLVD. 'B' ADDING 50 ACRES OF LOCAL PARKS IN EACH QUARTER.

250,000 POPULATION

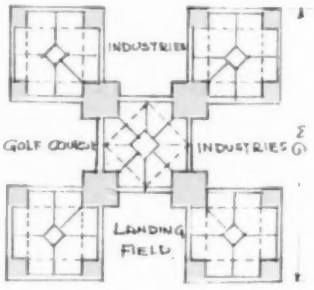
ALL SHADED AREAS PARKS OR OPEN SPACES

INDEX

- 16 story Corners
- All 6 story Blocks.
- 6 and 3 story blocks
- 6 story 6 stories
- 3 story block.
- 2 story flats



MALTESE CROSS



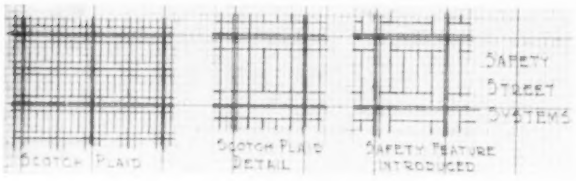
CHECKER BOARD

ALTERNATE SCHEMES FOR 1,250,000 POP

100% SUNLIGHT BUILDINGS ¾ MILE MAXIMUM DISTANCE TO LARGE OPEN AREAS. 20% OPEN AREA IN EACH UNIT

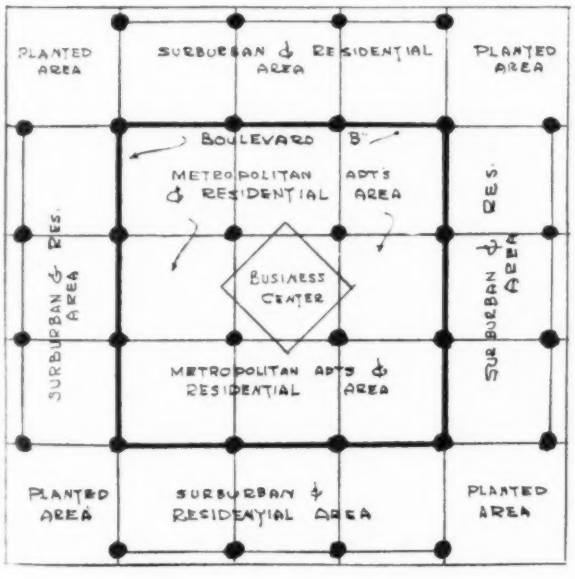
An Adequate Safety Street Plan

The detailed street plan is arrived at just as the previous improved building group plans were. Street space in its customary wasteful gridiron form is first diversified in the Scotch Plaid form, emphasizing through streets; and then altered to the safety plan

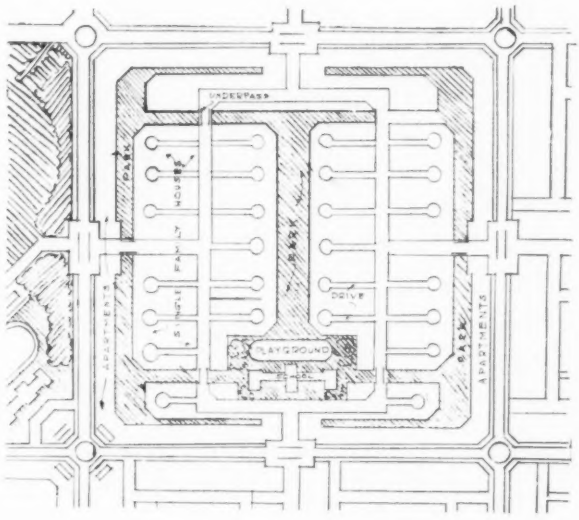


Details on this and the next page are lifted from page 234, which they help to explain

by which the unit cells are isolated from the danger of through traffic. This simple evolution by reason of its longer blocks and fewer intersections saves sufficient internal street area to widen every alternate quarter mile avenue from 80 feet to 120 feet. The one-half mile unit is then enlarged for convenience from 2,640 feet to 3,000 feet and a slightly greater area devoted to making the half-mile arteries 150 feet wide as previously shown.



The entire residential area then consists of 12 outer squares beyond the main boulevard circuit B.B. Four of these squares are treated with the standard safety street form, but occupied largely by row and detached single-family houses. Eight squares are arranged for detached dwellings in the form of cul-de-sac lanes with central block parks on the principle of the *Radburn, New Jersey*, plan.



Within the circuit boulevard, B, are eight more unit cells, surrounding the business center. Of these the corner four are treated as shown on page 232, while the others are varied to provide local business streets (A, A, on the same page), and contain eight 15-acre school sites and eight 4-acre parking blocks. (In each of the apartment house blocks for 3 and 6-story buildings, space is provided for parking in addition to the normal street space. Court areas are to be occupied partly by green lawns and partly by paved areas over garage space. Each block is also provided with a nursery school and ample play space for small children. Each school serves 230 to 250 families living within the block; this is an ideal size for an efficient nursery school.)

If we take the North West section of the entire City, then, and show it as on page 232, the distribution of apartments and houses in it may be analyzed as shown at the right.

(This scheme is shown on page 234 as "Scheme X.") The A street here has one depth only of re-entrant 6-story apartment groups, set back above a frontage of stores. All apartments of 6-stories or more—all the large ones, in other words—are confined to the four A streets, and the two sides of the circuit boulevard, B. The 3-story flats are on the C avenues, and the 2-story flats are on the D quarter-mile, 80-foot streets in the central area only. The high buildings surround the area of low ones.

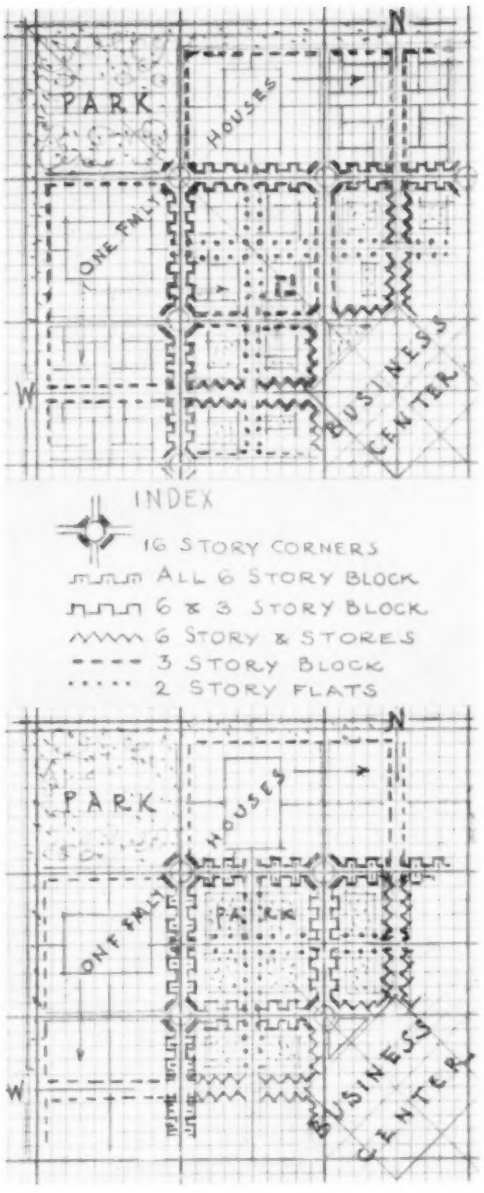
This plan houses 250,000 people in

32% one-family houses
33% two- and three-story flats
35% elevator apartments,

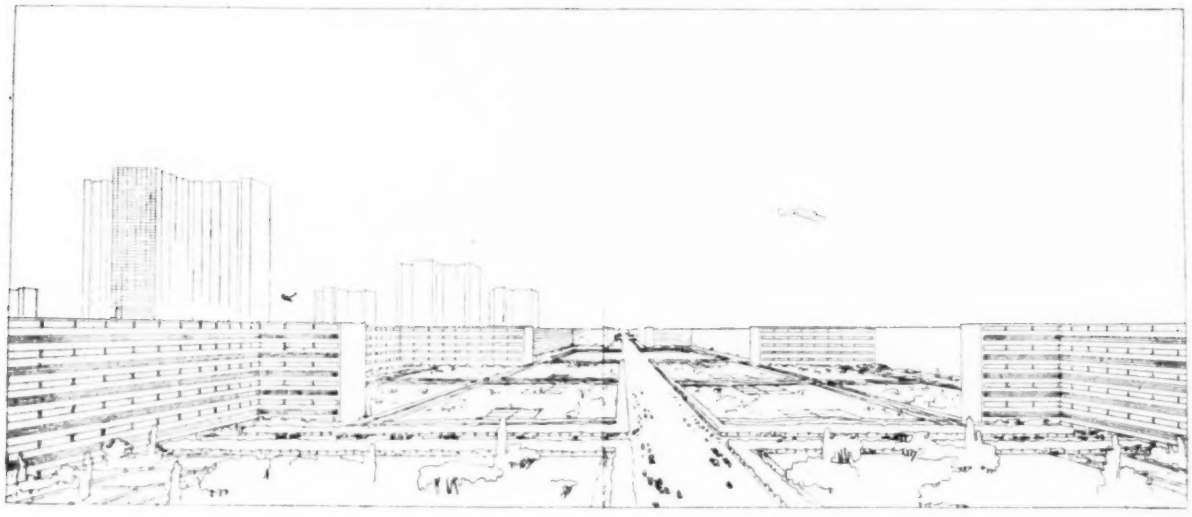
covering altogether only 12% of the gross area of the city counting streets, or 17.5% of the net area within the block lines.

An alternate plan, Y, disposes differently of the central area within the boulevard B. It eliminates all the single-family houses within this area, which in Plan X occupied the central 15-acre space in each unit cell, with 116 houses in each unit. It requires the expansion of only a few 3-story flats to 6-story apartments to retain the same population, while every 1500-foot unit cell is provided with a local 15-acre park. This plan still leaves over 30% of the houses, in the city as a whole, single-family ones: a ratio which now holds for our twenty-two largest cities.

Any number of variations could be made increasing or decreasing the potential population or changing the proportion of apartments and houses. Three additional stories added to the three- and six-story apartments within the central district for which there is ample open street and park space would increase the population by 60,000



counting as before 3½ persons to each apartment as compared with 4½ for each flat and 5 for each single-family dwelling. The value of the count is merely to indicate the generous capacity of even this small three-mile area occupied by buildings covering an average of 17.6% of their sites and so arranged as to avoid all light courts and cross interference.



"THE CITY OF TOMORROW"

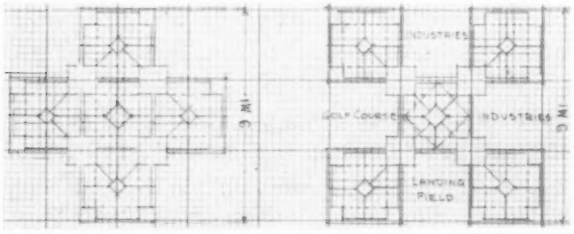
A SCHEME BY THE EUROPEAN ARCHITECT LE CORBUSIER

"It would require a revolution in our ideas of city building and land ownership"

ORDER OR CHAOS

As has been previously emphasized, these studies are diagrammatic only. If they represented merely planning ideals there would be no reason for stopping with mere adaptations of present forms. Why not go the whole way and adopt such thoroughly organized schemes as those suggested by Le Corbusier for his "City of the Future" —or Sunlight Towers as suggested by Kocher and Ziegler in THE RECORD, March, 1929. Certainly these are more imaginative and perhaps more rational than the suggestions offered here. But they require a definite and immediate revolution of our entire ideas of city building and land ownership. These suggestions on the other hand have been built up step by step from existing conditions and habits; they represent possible improvements under guided evolution. To secure any degree of reasonable stability and satisfactory solution of our present city problems, we must place controls on the use of land both in its original subdivision and in the form and capacity of its third dimensional elements and human content. Such controls are already existent in the enforcement of standard street patterns and in zoning control of height and bulk of buildings, and provision of open spaces. Evolution is not needed so much in the kind as in the degree of such control. Present controls have made some impression on the quality of city building, but far too little They fall far short of placing a sufficient check on the congestion of land use to assure either decent living conditions or reasonable traffic burdens on our streets. Improvements are to be had, first through a better disposition of space in streets—open spaces and building areas, and second, through a regulated maximum bulk or density which may be secured either through a proper relation of built-on to open space on each individual site, or, better, a combined bulk and pooled open area for each given block or unit cell. These studies indicate roughly that we might easily and without hardship or excessive cost go so far as to limit building areas in our larger city residential districts to a 20% maximum ground coverage and perhaps 30 families per gross acre—the distribution in small buildings or large, high or low, to be somewhat optional, adjustments being made on the basis of at least a 40-acre unit cell. This is from 50% to 100% greater cover and density than that used in these studies. The exterior suburban half-mile units have about 1,600 dwellings in 206 acres or 8 families per acre, including

apartments on one side touching the Circuit Boulevard. The interior units have about 19 families per acre at 2 to 3 and 6 stories (3,900 families in 206 acres) or 22 families per acre in 3 to 6 and 9 story apartments in plan X or with a 15-acre park center in each quarter unit (4,200 families in 206 acres) in plan Y. Even these low coverages and densities provide for over a quarter million population on 67% of the 3-mile square city not otherwise devoted to large parks, business, clubs, and church sites. This seems almost incredible until we understand that within this limited belt, only 1¼ miles at any point from the edge of the business center on the one hand or open country on the other, we expect to place only dwellings and all those things directly associated with *living* rather than with *working:* dwellings, apartments, stores and markets, garages, etc. We eliminate from this narrow area all those usual interruptions and foreign uses which customarily lie on our way from dwellings to work.



Such are railroad yards (even stock yards), lumber and material yards, coal pockets, junk yards, warehouses, ice plants, gas tanks, one-story industrial plants, tax payers and dirt collecting vacant lots held open for speculation and anticipated profit. All these not only interfere with our convenience and double or treble our distances of daily travel, but increase the length of utilities and other services otherwise necessary for our orderly and connected residential area. These interlopers must be removed under the plan only to a maximum of 1½ miles from the center of our residential areas—where with industries just beyond they will be in easy reach over traffic arteries of double capacity giving access inward to the commercial center and outward to supply and industrial centers, in opposite directions at the morning and evening hours of congestion. Neither the arrangement and disposition of these work and supply areas nor the problems of transportation are attempted in this study. But by limiting the size and capacity of living areas to 3 miles over-all and surrounding them with park land and park belts, 250,000 people are provided for in a single unit with four sides open for other purposes and restricted against residential use for a distance sufficient for these other needs. Instead of enlarging these units and multiplying congestion and interference, larger cities should be composed of additional units. Five such units either as a cross or better a check board permit 1½ million population with four interrelated open areas three miles square for industrial needs—truck gardens, landing fields and larger recreational needs not supplied within the habitation units. Even this city requires a total spread of only nine miles. A somewhat enlarged business center in the central unit would require merely an increased height of apartments for the same population within the circuit boulevard leaving the zoned proportion of dwellings 35% elevator, 33% flats and 32% single-family dwellings, or any other proportion most suitable to local needs. Wide variations in the kind and density is possible under the plan. It is to be remembered, however, that no permanently satisfactory or scientific method for designing streets for utility capacity has been found practicable without assuming and maintaining some reasonable limits to the population to be served.

A discussion by Mr. Wright of the traffic system associated with his plan will be found in "The American City" for March

Rittase Photo

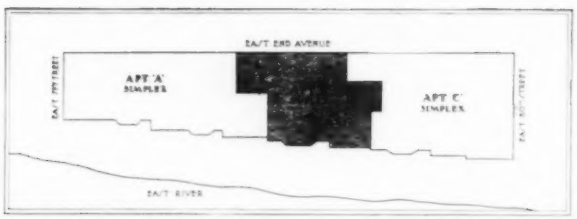
WESTBURY APARTMENT HOUSE, PHILADELPHIA

FRANK E. HAHN, ARCHITECT

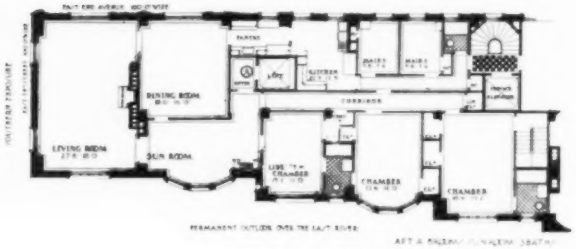
Photo. Dreyer

NUMBER 1 WEST END AVENUE
APARTMENT, NEW YORK CITY

PLEASANTS PENNINGTON AND ALBERT W. LEWIS, ARCHITECTS



The shaded portion represents duplex apartments

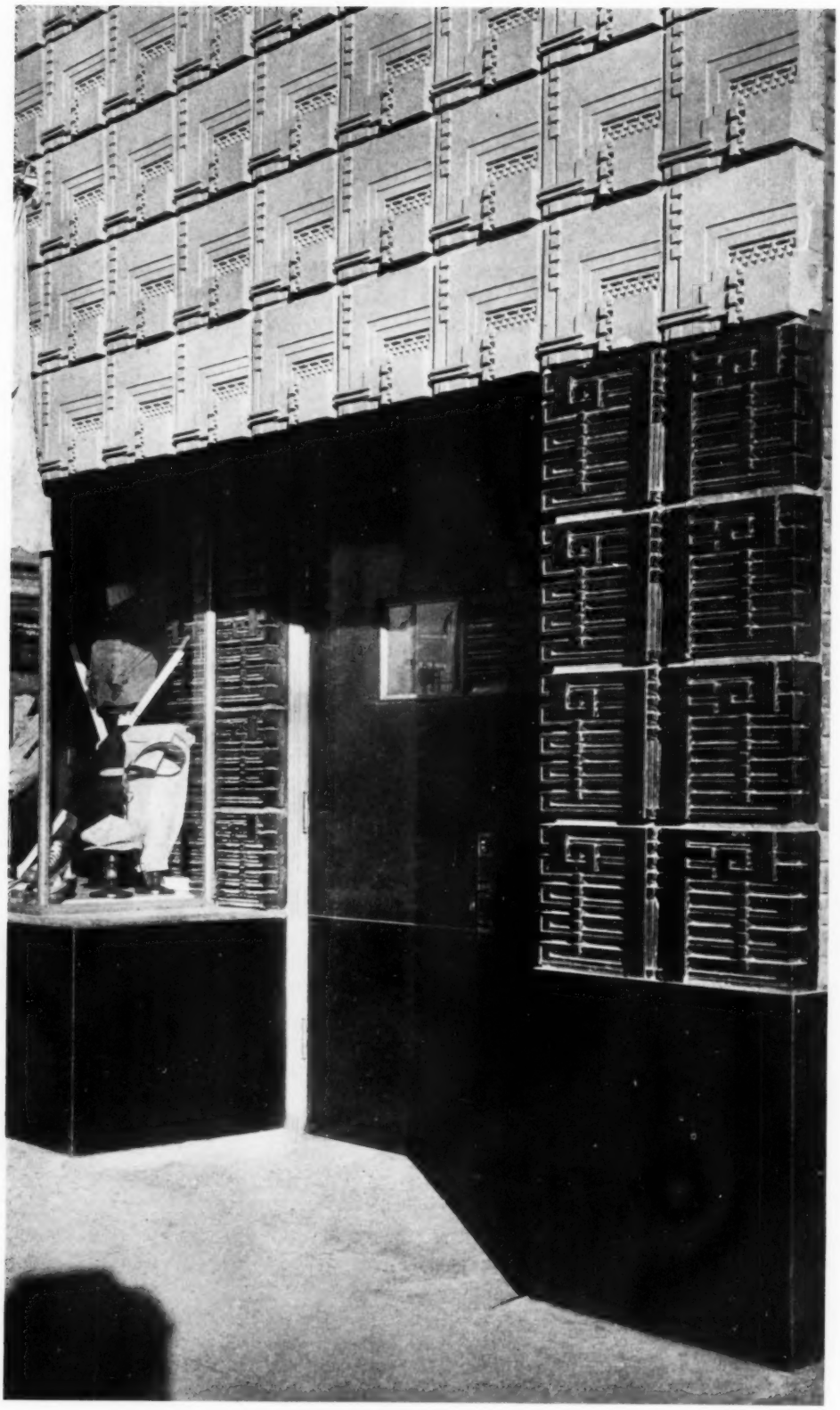


Simplex apartment, type A

Rittase Photo

REAR VIEW 1608 WALNUT STREET, PHILADELPHIA

TILDEN, REGISTER AND PEPPER, ARCHITECTS



SHOP FRONT IN AN APARTMENT BUILDING

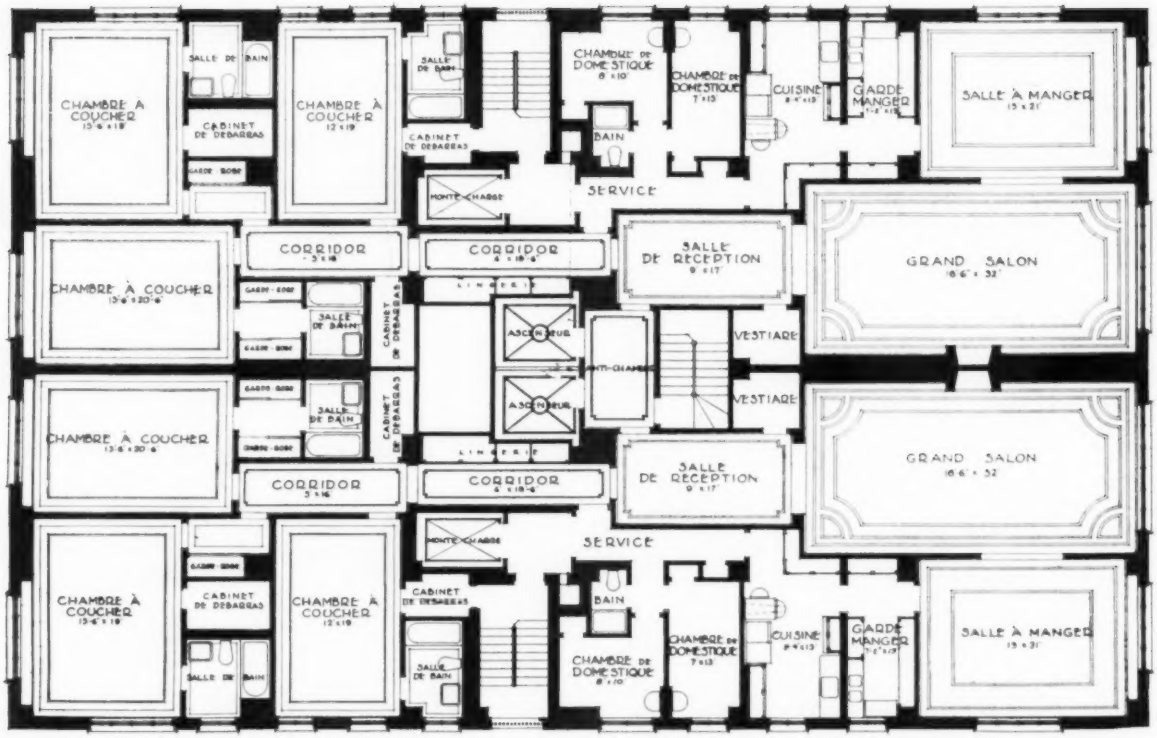
DELMAR AND DE BALIVIERE BUILDING, SAINT LOUIS

BOWLING AND SHANK, ARCHITECTS

Photo, Chicago Arch. Photo. Co.

DRAKE TOWERS, CHICAGO

BENJAMIN H. MARSHALL, ARCHITECT



TYPICAL PLAN, 20th TO 26th FLOOR
DRAKE TOWERS, CHICAGO

BENJAMIN H. MARSHALL, ARCHITECT

The planning of so large a rectangular area is always difficult, necessitating such devices as "galleries" (here called *salles de reception.*) It has been handled well. If such handicaps are to be eliminated we must have a better subdivision of the land.

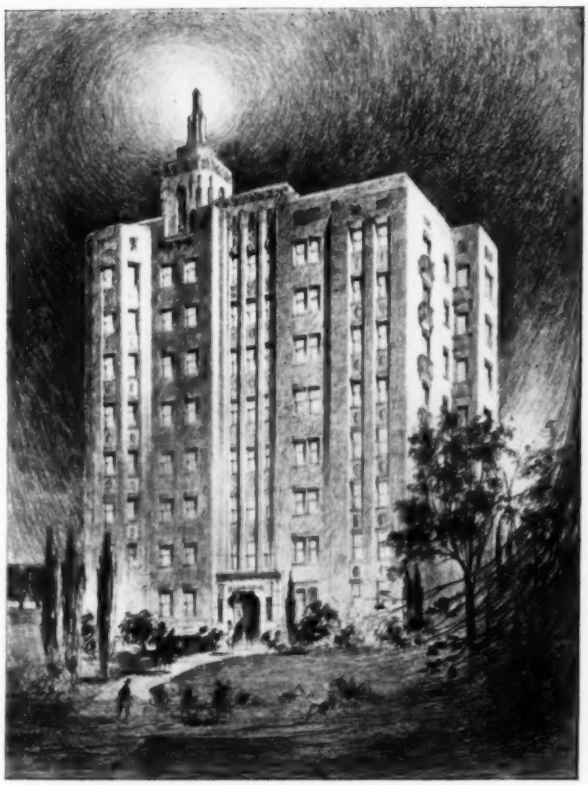
Photo. Piaget

APARTMENT HOUSE FACADE

DELMAR AND DE BALIVIERE BUILDING,
ST. LOUIS

BOWLING AND SHANK, ARCHITECTS

The use of abstract straight-line decorative motifs of this sort began with Frank Lloyd Wright. Experiments with it are to be welcomed, but considerable study of the underlying ideas will be necessary before success can be had in general practice.



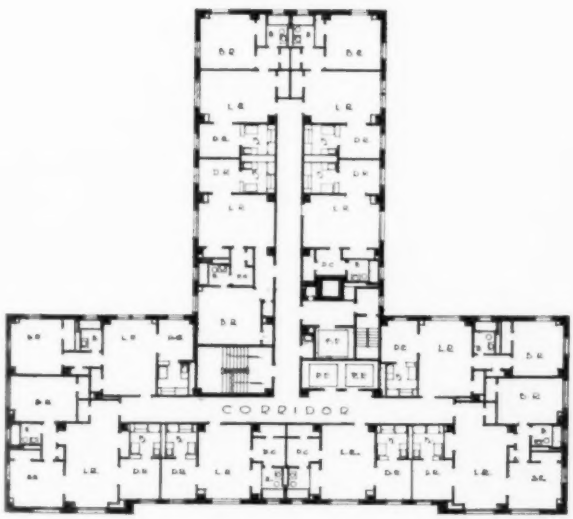
TYPICAL FLOOR PLAN

Above and Left: KING COLE APARTMENT, KANSAS CITY

NELLE E. PETERS, ARCHITECT

Below: APARTMENT AT NINETEENTH STREET AND SECOND AVENUE, NEW YORK CITY

GIULIO LEVY, ARCHITECT



TYPICAL FLOOR

HAWTHORNE APARTMENTS, ST. LOUIS

PLEITSCH AND PRICE, ARCHITECTS

Living room with disappearing beds, dinette, dressing closet, and kitchenette occupy small floor area

Photo. Padilla Studios

Above: ENTRANCE GATE
VALENCIANA APARTMENTS
RANCHO SANTA FE, CALIF.
DESIGNED BY LILIAN J. RICE

At Left: FIRST FLOOR PLAN AND GENERAL VIEW
APARTMENT BUILDINGS,
KANSAS CITY
NELLE E. PETERS, ARCHITECT

Photo. Padilla Studios

VALENCIANA APARTMENTS, RANCHO SANTA FE, CALIF.

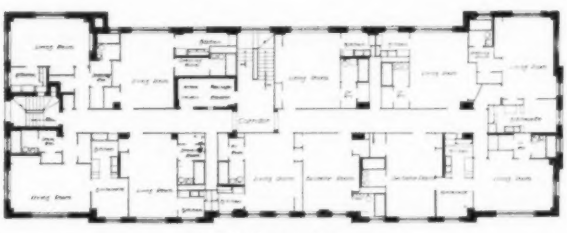
DESIGNED BY LILIAN J. RICE

APARTMENT HOUSE
ON CROWN STREET,
BROOKLYN

BERLINGER AND KAUFMAN,
ARCHITECTS

Above: TYPICAL FLOOR PLAN

At Left: GENERAL VIEW



TYPICAL FLOOR PLAN

PLAN, APARTMENTS, KANSAS CITY

PLEITSCH AND PRICE, ARCHITECTS

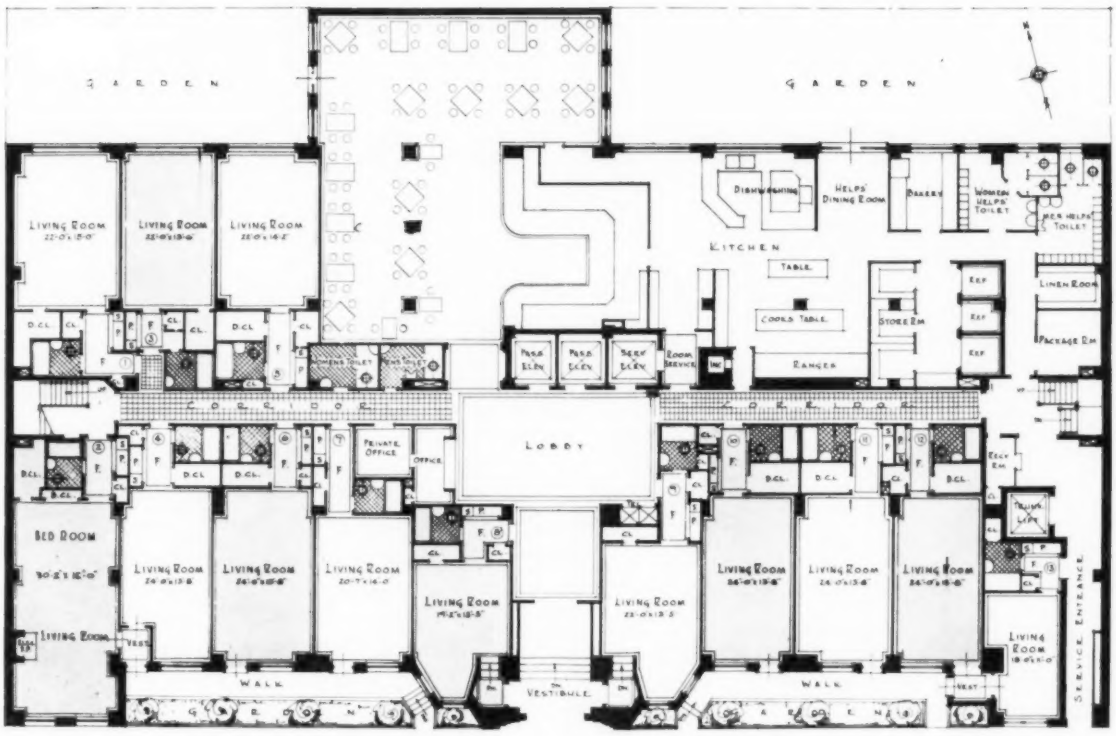
A system of living rooms with kitchenettes. Bachelor rooms may be rented separately or may be sub-rented by tenants holding living suites

GENERAL VIEW

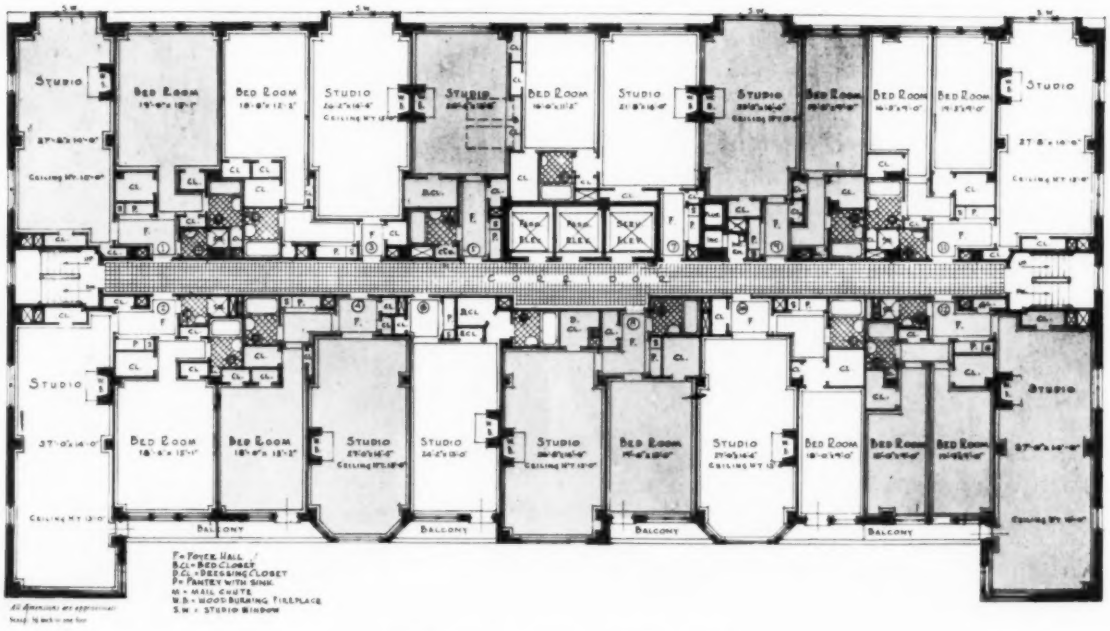
TYPICAL FLOOR PLAN

PROJECT AT GRAND STREET, NEW YORK CITY

SPRINGSTEEN AND GOLDHAMMER, ARCHITECTS



GROUND FLOOR, NORTH SIDE



UPPER FLOOR PLAN, NORTH SIDE

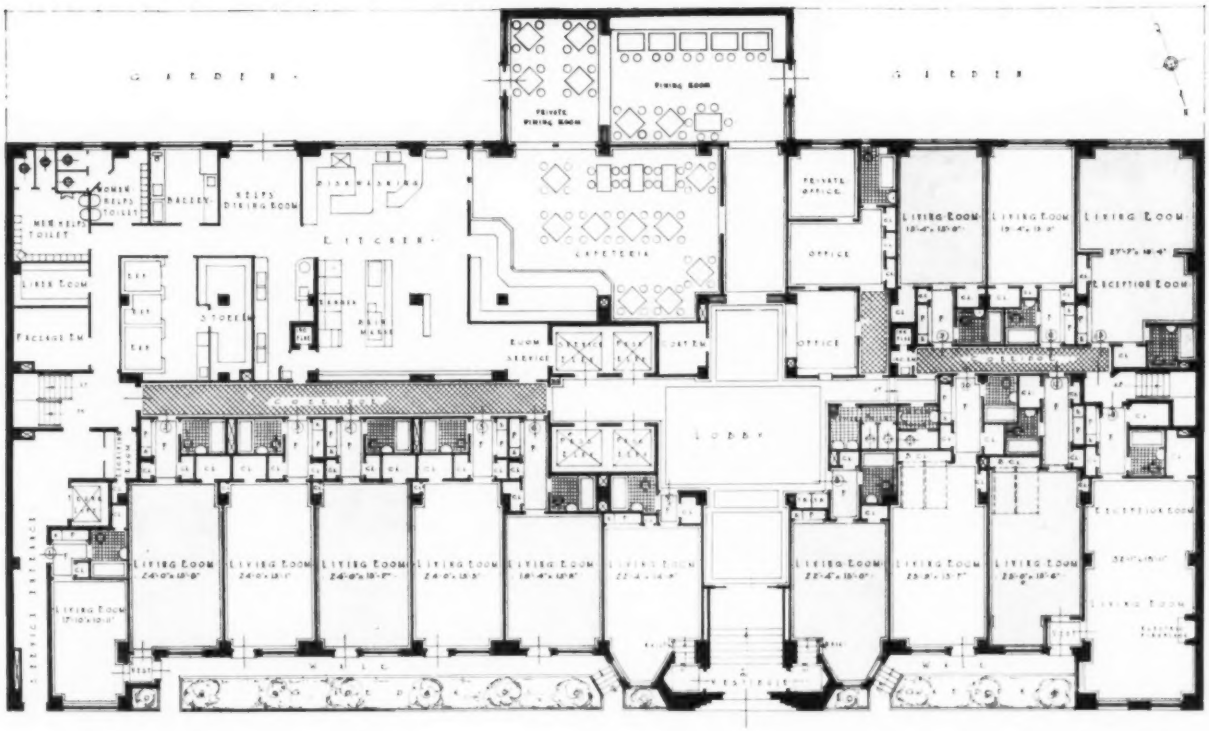
BEAUX-ARTS APARTMENTS, NEW YORK CITY

KENNETH MURCHISON AND RAYMOND HOOD, GODLEY & FOUILHOUX, ARCHITECTS

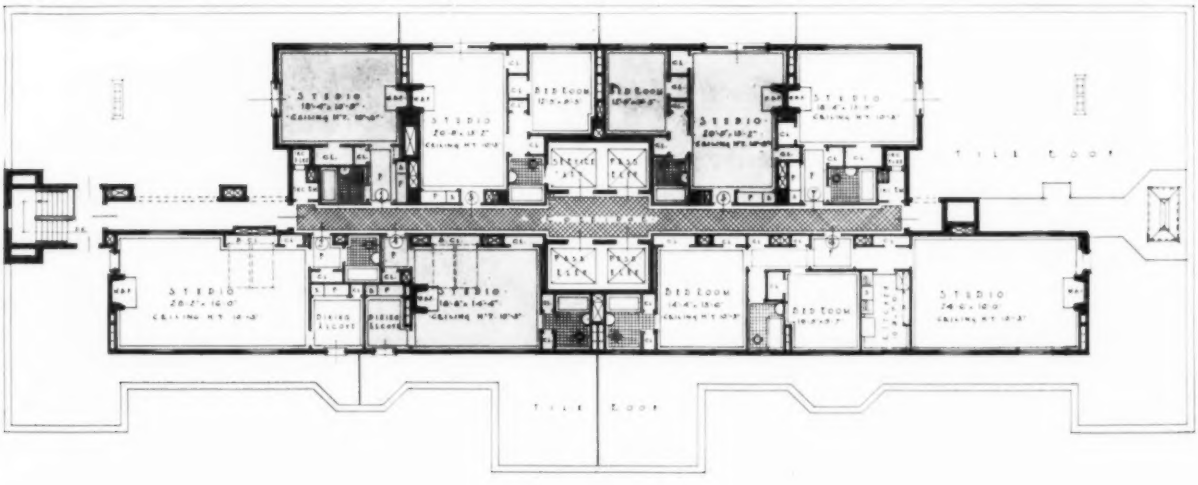
Photo Abbot

BEAUX-ARTS APARTMENTS, NEW YORK CITY

KENNETH MURCHISON AND RAYMOND HOOD, GODLEY & FOUILHOUX, ARCHITECTS



GROUND FLOOR PLAN, SOUTH SIDE



PENT HOUSE, SOUTH SIDE

BEAUX-ARTS APARTMENTS, NEW YORK CITY

KENNETH MURCHISON AND RAYMOND HOOD, GODLEY & FOUILHOUX, ARCHITECTS

VIEW OF SOUTH SIDE

BEAUX-ARTS APARTMENTS, NEW YORK CITY

KENNETH MURCHISON AND RAYMOND HOOD, GODLEY AND FOUILHOUX, ARCHITECTS

VIEW FROM WEST

Photos, Bauwelt

Photo. Wurts Brothers

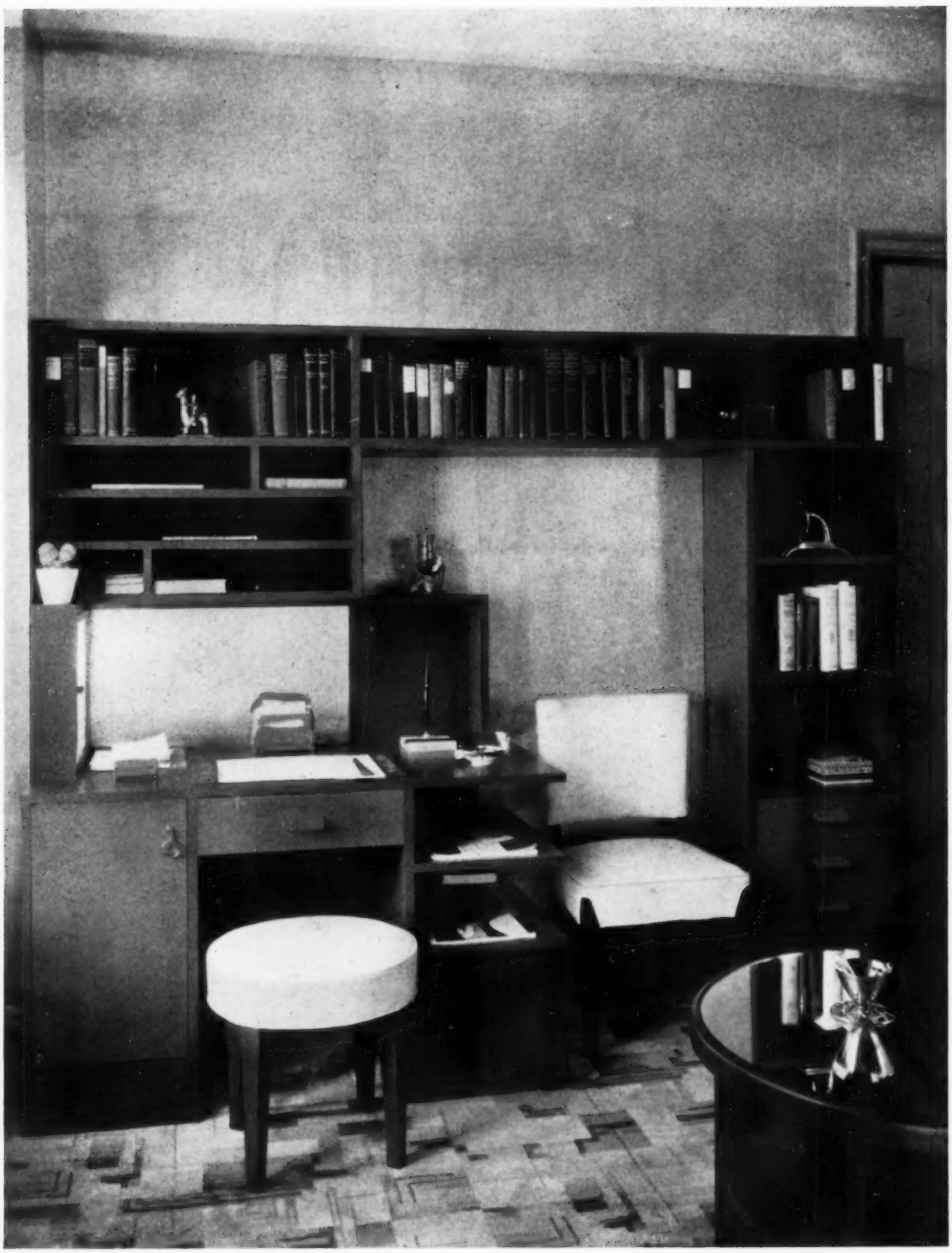
APARTMENT AT 1040 PARK AVENUE, NEW YORK CITY

DELANO AND ALDRICH, ARCHITECTS

Photo. Wurts Brothers

APARTMENT AT 960 FIFTH AVENUE, NEW YORK CITY

CROSS AND CROSS, ARCHITECTS



Photo, Van Anda

SITTING ROOM

APARTMENT FOR MRS. O. R. SOMMERICH, NEW YORK CITY

WOLFGANG AND POLA HOFFMANN, ARCHITECTS

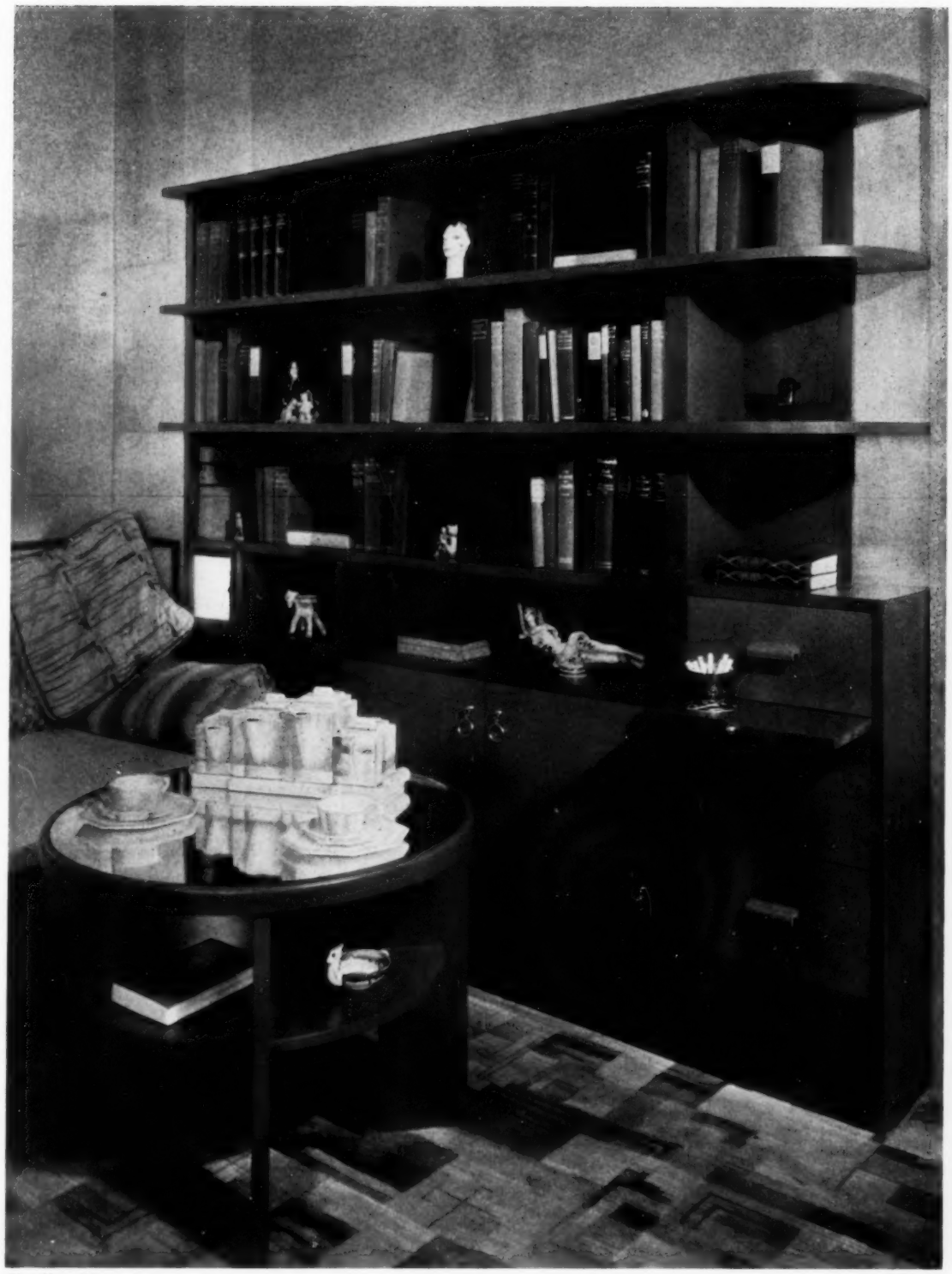


Photo. Van Anda

SITTING ROOM

APARTMENT FOR MRS. O. R. SOMMERICH, NEW YORK CITY

WOLFGANG AND POLA HOFFMANN, ARCHITECTS

A notable example of economy in space. This room is eleven by twelve feet in its dimensions

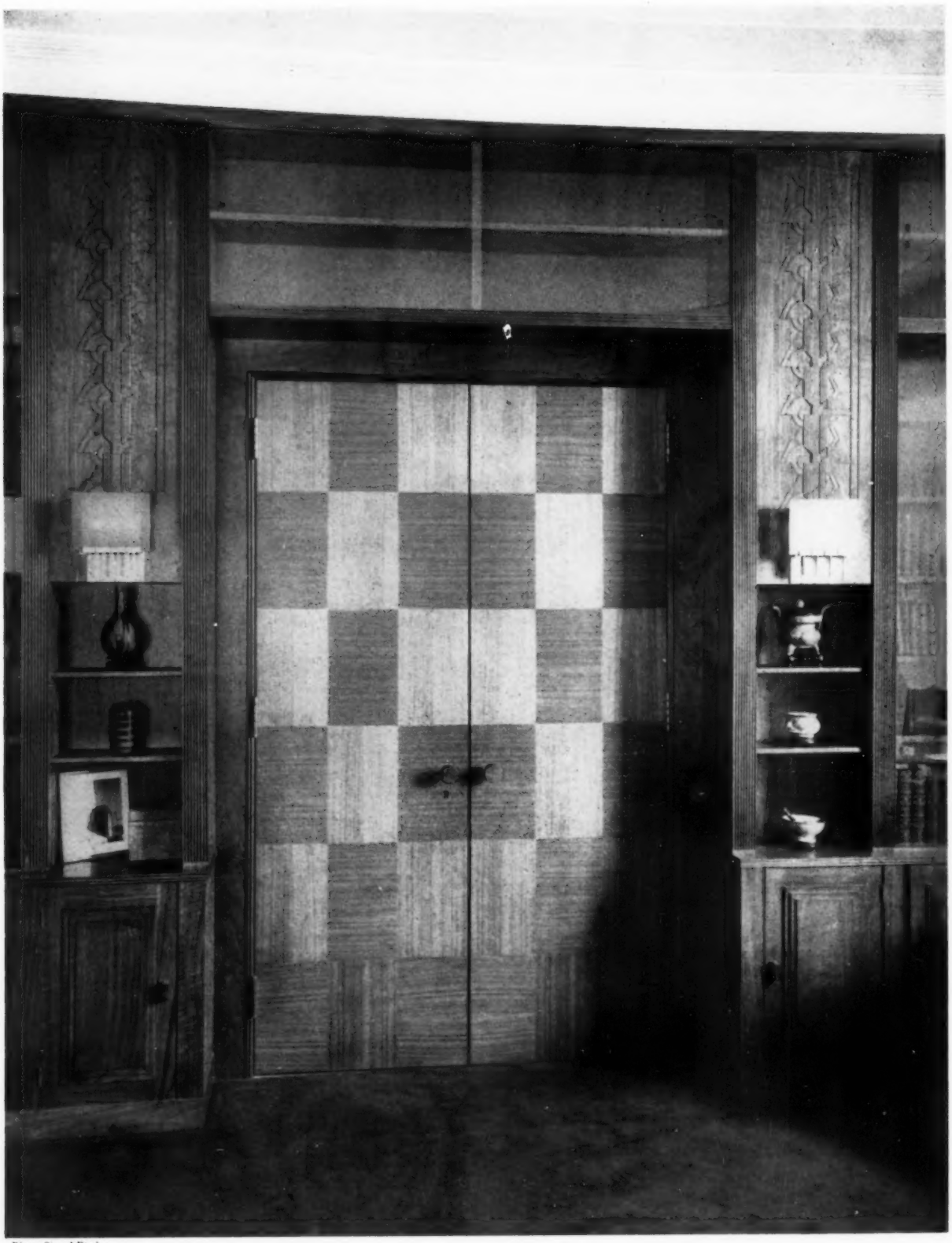


Photo. Sigurd Fischer

LIBRARY DOOR

CHARLES J. LIEBMAN'S APARTMENT, NEW YORK CITY

BUCHMAN AND KAHN, ARCHITECTS

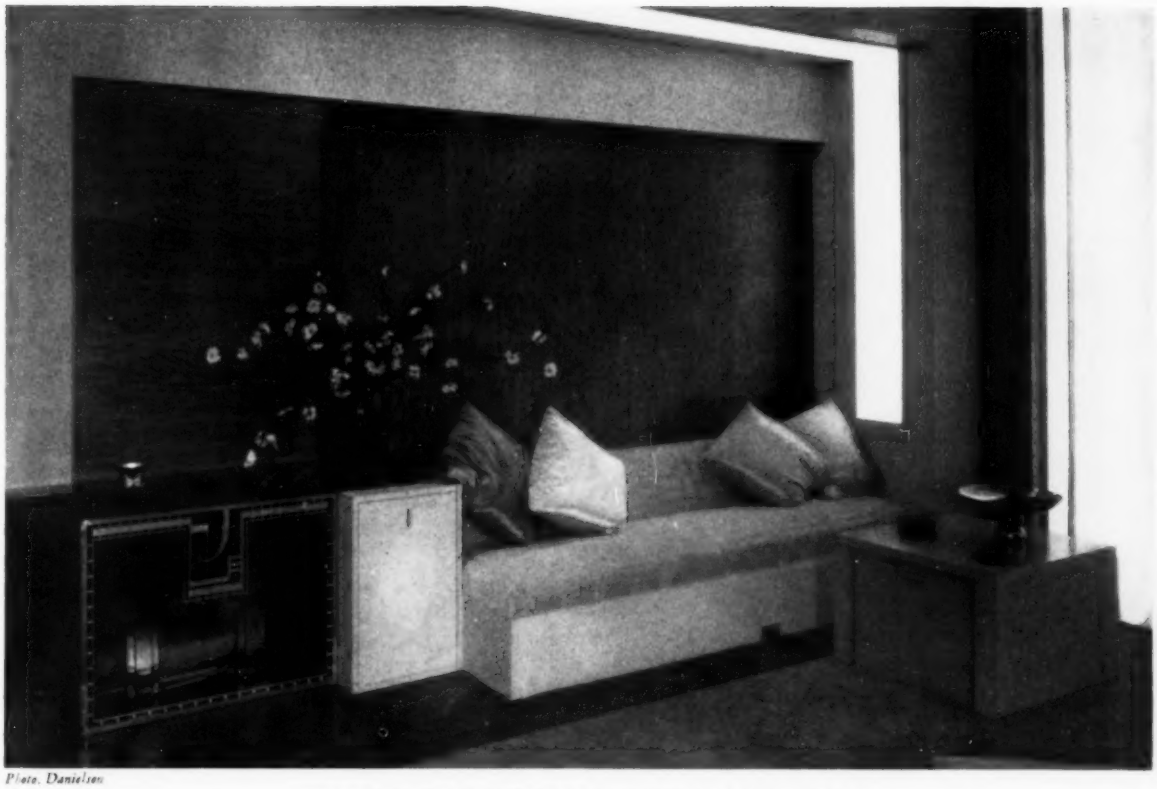


Photo. Danielson

APARTMENT INTERIOR, NEW YORK CITY

WHITMAN AND GOODMAN, ARCHITECTS

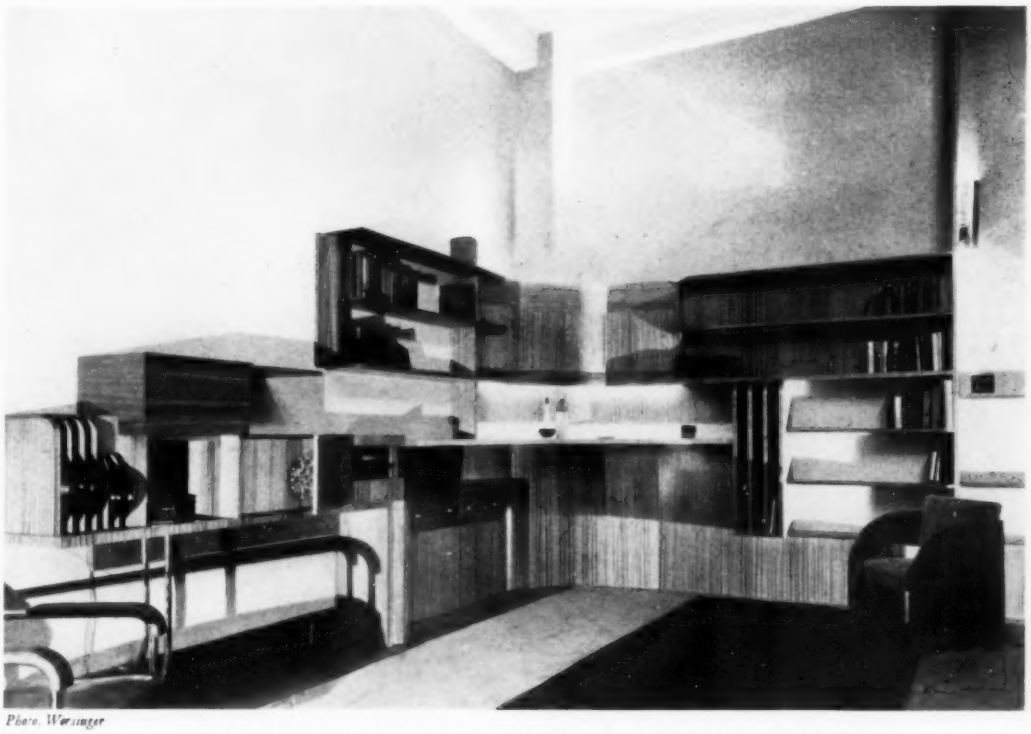


Photo. Wurmser

APARTMENT FOR MR. HERZBERG, NEW YORK CITY

HOWE AND LESCAZE, ARCHITECTS

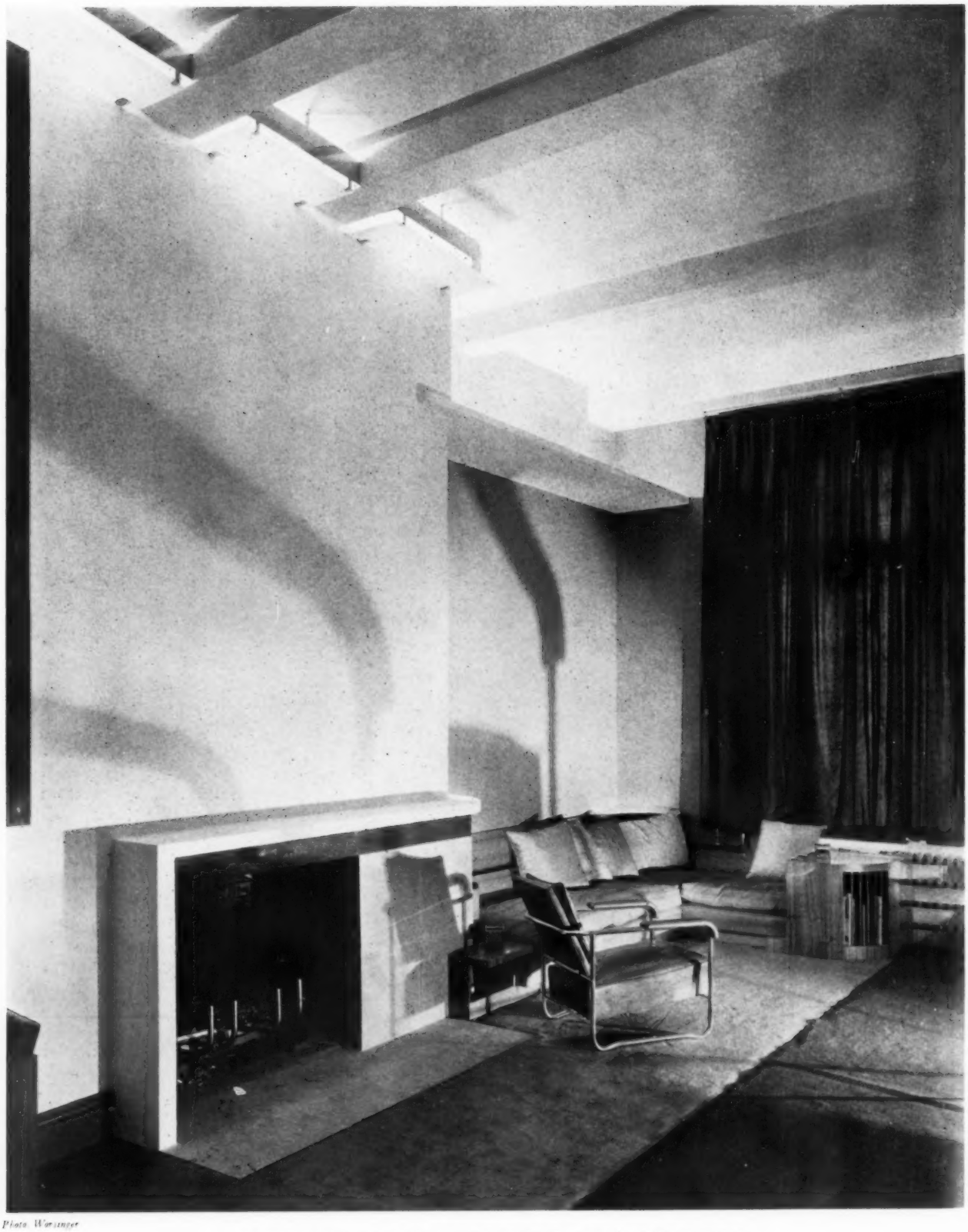


Photo. Wurts

APARTMENT FOR MR. HERZBERG, NEW YORK CITY

HOWE AND LESCAZE, ARCHITECTS

COOPERATIVE HOUSING IN DENMARK

BY L. MARNUS

The first cooperative society in Denmark, *Arbejdernes Byggeforening*—The Workmen's Building Association—was founded in Copenhagen in 1865 by a body of workmen who carried into effect the idea of a physician named Ulrik. The aims of the association were (and are still) partly to act as a savings bank for its members and partly to build sound and well-arranged houses which become the property of the members on profitable terms. Each member contributes two kroner monthly for a period of ten years, after which he is at liberty either to withdraw his money with the accumulated interest of 4½% per annum or to leave his money standing and be entitled to a continuous participation in the annual distribution of dividends and in the drawing of lots for the houses.

It may seem a disadvantage for the members to have to wait until they win the lottery before they secure a house but the number of members that want houses far exceeeds the building capacity of the society. It seems, therefore, that no other system would be more successful, since it is in the interest of the association always to have new members joining in the greatest numbers. Moreover, the members receive the highest rate of interest on their invested money that it would be possible to obtain from any savings bank. A member is entitled to take part in the lottery when he has been a member for half a year and has paid in at least twenty kroner ($5.50). The winner of a house becomes the owner after from twenty-five to thirty years. During that period he pays from fifty to sixty kroner ($15.00) yearly in addition to the estimated rent of the house. The payments vary a few kroner, and the years vary in number as well, according to the cost of each group of houses. The estimated rent of the house—that is, the sum at which the house would rent ordinarily—is always low and less than the owner would have to pay for a similar dwelling anywhere else.

According to statements issued by the association, a two-storied house with a mansard roof and containing three flats (each of which consists of two rooms and a kitchen) has been built for 13,600 kroner ($3,600); and the owner is paying fifty-six kroner yearly for a period of twenty-eight years amounting, with interest, to about 2,800 kroner. To this must then be added the first ten years' membership subscription (two kroner a month) which, with interest, amounts to about 300 kroner. Thus, this member will become the owner of his house for 3,100 kroner—or about $850—this being the actual price paid for a house worth $3,600. After twenty-eight years, he occupies the house rent free and, in addition, draws a good profit by letting out that part of the house he does not occupy himself.

The association, since its formation, has erected no fewer than 1,500 houses containing about 4,000 flats. The houses are mainly in rows. The earlier-built houses are mostly two-storied, having a flat on each floor consisting of two rooms and a kitchen. In the attic are three rooms for common use and there is a basement under the whole house for washing and storage. The later-built houses have a mansard roof in which is planned a third flat. The flats also have been increased in size and consist of three rooms and a kitchen. All the houses have front and back gardens.

Toward the end of the last century and the beginning of the present, building societies sprang up like mushrooms in all parts of the country, in many of which the cooperative spirit was unfortunately lacking so that, no exception being taken to members using their property as a basis for speculation, the houses were sold and resold at ever increasing prices and, eventually, came into the possession of well-to-do people.

A stop to this evil was the formation of *Dansk Havebolig-Forening*—Danish Garden City Society, 1912. This society built good and cheap houses for its members but reserved to itself the increment of the property, should a member resign from the society and from his house. An instance of this kind of cooperation is the garden city *Grondalsvaenge*. A member of this society contributes twelve kroner a month until he has paid in 550 kroner ($150). He is then entitled to a house and has nothing more to pay before the rent comes due. The members never become owners of their houses; still, they gain in not having to contend with a landlord's profit.

Moreover, an annual deduction of the mortgage is included in the rent, the latter diminishing gradually and so rapidly that in thirty years it is less than five dollars a month. In this way, if the husband dies, the society acts as a premium-free support for the widow.

The houses are either single or semi-detached. They consist mainly of a small hall, two rooms and a kitchen on the ground floor; three bedrooms on the top floor, and spacious rooms for washing and the storage of fuel and victuals in the basement. The gardens around the houses vary from 4,000 to 6,000 square feet.

Arbejdernes Andelsboligforening (The Workmen's Cooperative Housing Society) is the largest cooperative housing society in Denmark. It belongs to the group of rational housing societies that does

HOUSES OF NYBODER, COPENHAGEN
EARLY 17th CENTURY HOUSING SCHEME

This type of housing superseded a still older one, built by King Christian IV. This sovereign wanted his naval staff at call, so he housed them near at hand, in one-story houses with ceilings six feet from the floor, and with the loft reached by a rope

not permit its members to sell their shares, thus eliminating speculation. The principle upon which the society is built is mainly that of the Rochdale. A member subscribes a share of forty kroner ($11.00) and when he obtains a flat, he pays a deposit usually equivalent to a year's rent. This deposit and the share always belong to the member and yield an interest of 4%. They are returned in full if the member resigns from the society, or moves. The society comprises a number of branches all over the country and for each group of buildings built, a branch is created. The branches have no economical responsibilities toward one another and are accountable only to the general society which always has the right of possession to the plot and the buildings. The houses are financed by loans from money institutions and from the Government. Loans have been secured to as much as 90% of the cost of the building, the remaining 10% being acquired by the shares and the deposits of the members. The society has chiefly confined itself to the building of large groups of flats of from two to five rooms so as to meet any requirement.

An exceptional branch, however, is the garden city of Brönshöj which is beautifully situated on a site sloping towards a small lake around which a garden has been designed as part of the layout. The cooperative ideas of this society are far in advance of those of any other society, inasmuch as it owns two large brickworks and executes the carpentry, joinery, painting and other work in connection with the erection and repair of the buildings. In each group of houses are all kinds of shops which are also conducted on the cooperative principle.

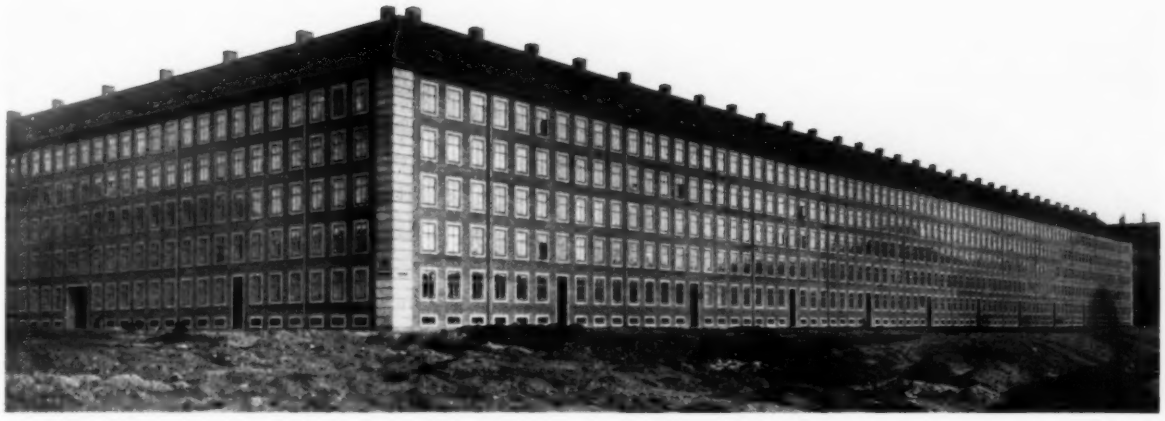
Another large housing society is *Köbenhavns Almindelige Boligselskab* (The Copenhagen General Housing Association). This society, although its building activities have been very extensive, acts merely as organizer for the building operations. Each branch is an independent cooperative as soon as its group of buildings is completed. From that moment, the branch has no obligation either to the administration or to other branches. Among the society's—or administration's—numerous undertakings is *Bakkehusene*, a modern layout with rows of houses built around a park. These houses are built to nine different plans and consist of four or six rooms besides a kitchen and scullery. They have large gardens, both to the front and back.

During the last ten years many efforts have been made to produce small dwellings which must be as cheap and comfortable as possible and, at the same time, of a design to harmonize pleasantly with their surroundings. With this aim in view, the society of the garden city, *Studiebyen*, invited architects to design small but well-arranged and economical houses of various types. The experiment proved to be a great success as no fewer than twenty-five architects contributed to the erection of about two hundred houses.

These houses are examples of the single and double dwelling type houses as well as row houses. As a comment on the general satisfaction with a small home, it may be said that most people regard the detached one-family house the ideal home yet it is the most expensive to build and colder to live in. The double house is but little more expensive than the house of a row and it satisfies people's want of being able "to walk around their own house."

HOUSING SCHEME IN THE GARDEN CITY, STUDIEBYEN

P. NIELSEN, AUG. RASMUSSEN AND RORDAM-JENSEN, ARCHITECTS



COOPERATIVE APARTMENT HOUSE SCHEME, COPENHAGEN

KAY FISKER, ARCHITECT

An extension into the multifamily field of the activities of the Danish Cooperative housing societies

COURT OF APARTMENT HOUSE ABOVE

KAY FISKER, ARCHITECT

These projects are financed by loans both from money institutions and from the Government, up to a high proportion of their value

TYPE OF SINGLE HOUSE IN GARDEN CITY STUDIEBYEN

KAY FISKER, ARCHITECT

An example of small but well-arranged and economical single houses built for the cooperative society of this garden city

POSSIBILITIES FOR HOUSING RESEARCH

Photo. Rider and Driver

The house, like the carriage, has reached a high state of development . . . along came the automobile . . .

"IT IS A COMMONPLACE that a man buying an automobile to-day pays about half the price he would have had to pay a few years ago, and gets twice as good an article. If, however, he has to build a home, he will find the conditions just about reversed. The only reason for this absurd situation is that one industry has profited by first-rate scientific and engineering thought, and the other has not. It certainly cannot be laid to the rising cost of material and labor, since this has affected both industries alike. A foundation devoted to the study of housing problems and equipped to experiment in different types of design and construction would have the opportunity to make a contribution of inestimable significance toward the improvement of present conditions."—Annual report of Mr. Frederick C. Keppel, President of the Carnegie Corporation.

If there is a possibility that technical research would reduce houses to the same production basis as automobiles, one wonders why foundations and philanthropists interested in housing have not used this method of seeking a solution. John D. Rockefeller, Jr.'s advisors, Julius Rosenwald's advisors, the City Housing Corporation, and the City and Suburban Homes Company* have invested millions in model housing but have to date definitely and purposely avoided research into new construction methods as an aid to solving the housing problem. There are two reasons for this: First, sociological research has been confused with and substituted for technological research. For example, a sociological research was made for the purpose of obtaining information on which to base the design of a large "model tenement." The research developed the fact that the families for which this "model tenement" was to be built could not afford to rent a modern four-room apartment. It was also found that at the present time they were living two families to one apartment and that they averaged one child per family. Since the rent-paying ability of this group made it impossible (*under present construction methods*) to build separate apartments for each family, a very efficient plan was worked out which gives the maximum privacy possible—*with two families and two children in four rooms*. This development has good sanitation, light, air, gardens, etc., and is entirely commendable—under present construction conditions. This is sociological research and a *practical* solution of a social problem but not a solution of an engineering or production problem.

* Reference must be made to the Forest Hills experiment of the Russell Sage Foundation. I consider this in the nature of an experiment rather than a scientific research such as proposed by Dr. Keppel, the difference being that in the one case there is a systematic search and research for a solution to a definitely stated problem with a list of requirements which must be met if the problem is to be solved; the other is an experiment to find out if a theory will work. At Forest Hills no detailed analysis of the problem and requirements was prepared but it was assumed that precast units would solve the housing problem, and experiments were undertaken on this basis. This has been true of the experiments of Thomas Edison and others who have tried to prove a theory instead of starting with a study of the basic requirements and trying to find a solution which would meet these needs.

The second and *major reason* for failure to conduct technological research as a means of solving the housing problem is the sincere belief on the part of certain people that very little if anything can be accomplished. For example, Mr. C. H. Holmes, president of the City and Suburban Homes Company, recently stated that the comparison of the house with the automobile was not sound, since the automobile was a recent invention and therefore, rapid improvement could be expected in it, accompanied by considerable reduction in cost, while the house had developed over a period of thousands of years and had been developed to a very high state of perfection.

Perhaps Mr. Holmes is right. The house, as we now think of it, can probably not be improved very much, certainly not to the extent suggested by Dr. Keppel in comparing it with the automobile. But I believe that if we were to compare the *means of transportation* with the *means of providing shelter*, we would have a better analogy. Before the introduction of the automobile, the horse and buggy had reached a very high state of development. There were no major improvements in these in the last century. The introduction of steel springs for reducing the jolting and the adding of rubber tires and other minor variations in style had slight effect on the transportation problem.

Looking at the problem of providing shelter, we may compare its development at the present time to that of the horse and buggy. Such attempts as have been made to improve this horse and buggy through use of larger brick units or substitution of concrete units has had slight effect on housing as a problem. The substitution of steel frame for wood frame has not altered the fundamental horse and buggy characteristic of the present house. Any real solution will involve as radical a transformation from the present type of house building as the automobile was a radical change from a horse and buggy.

As Mr. C. F. Kettering, vice-president of General Motors, in charge of research, says, "Do you remember the first automobile? Manufacturers weren't thinking so much of making automobiles. They were making horseless carriages. A carriage drawn by a horse was the pattern of transit fixed in the mind. And so we went on making carriages, even though the horse was no longer hitched to them. It took years before we began making automobiles along lines conforming to their special utility. When the bicycle was first invented, men had in mind a substitute for a horse. So they built a small wooden horse—like the ones we see in the merry-go-rounds—with a wheel between the front legs and another between the hind legs. It was a horse on wheels."* Is it not possible for us to benefit by our experience in the development of transportation and solve the housing problem in a logical manner rather than clinging to traditions? To be specific, why do we need 12-inch masonry walls in our buildings when other forms of shelter, such as ships, automobiles, airplanes, have walls some of which are only 1/100 of an inch thick?

Let us take a specific case. The Chrysler Building has aluminum spandrels backed up with masonry. Why should not the metal spandrel be backed up with 1 or 2 inches of insulation and lined on the inside with plaster or metal? If the interior partitions are to be plastered, the logical thing would be to apply metal lath and plaster to the insulation. If, on the other hand, the building is to have metal office partitions, and an ever increasing number of buildings are thus divided, the logical interior finish for the spandrel

* *The American Magazine*, January, 1930.

and wall panel would be metal to correspond with the office partitions. If the building is to be used for housing, the metal can be given a glaze, enamel, or lithograph finish, or left natural. A wall such as this would cost from ½ to ⅓ as much as present masonry construction and give a 90 to 95% reduction in weight. Possibly some material other than metal may be developed. Promising experiments are being made on a variety of materials but it will require research to find the solution. (See page 289.)

The suggestion of thinner walls immediately brings up several major questions. First, will it not lose more heat than a thicker wall? An insulating metal wall 1 2/10 inch thick, recently finished in Holland, has an insulating value equivalent to 17 inches of brick. (See page 384, THE ARCHITECTURAL RECORD, October, 1929.)

Second, building codes will not permit walls less than 8 or 10 inches thick: but several buildings in New York already have walls 3 or 4 stories high ¼ of an inch thick—glass set in steel frames. (See page 382, October, 1929.)

Third, thin walls would not stand the wind pressure. Those who base their thinking on tradition sometimes overlook the fact that more than 50% of the wall area of any of our tallest buildings is now ¼ of an inch thick—glass.

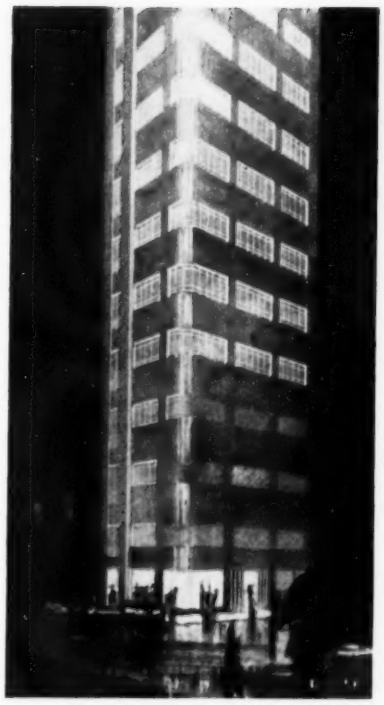
Fourth, practical builders object on the grounds that labor unions would not permit such a construction, forgetting that metal office partitions are now used.

Fifth, one of the outstanding objections from housing experts is that the wall cost is a very small part of the total cost. This is undoubtedly true, but the same method of solution which is applied to exterior walls can be applied to partitions and floors.

Equipment may likewise be simplified. Lewis Mumford pointed out in the January issue of THE ARCHITECTURAL RECORD "with respect to other parts of the house—the fixtures, the mechanical devices, the finish, it remains true that while *slight economies* are possible through further standardization, a good part of these items is already produced by mass methods and most of the possible economies have been rung out." Again using the analogy of the automobile, Kettering says, "When we want an automobile we do not have a dozen different dealers deliver steel and wheels and tires and springs and bolts and nuts to our back yard (all mass produced), and then have a mechanic or two come in and put them together into an automobile. What would an automobile cost built that way? Yet that is the way we build our house now—just as it has been done for thousands of years—slowly, piecemeal, by hand." To arrive at the same degree of efficiency as the automobile, all the various heating, plumbing, wiring, refrigerating and cooking units should be incorporated in one single unit which would be completely fabricated in a plant on the same basis as the automobile.

If the same brains, energy and money were expended on a solution of a "machine à habiter" that has been expended on the automobile, we would doubtless have a production approaching the automobile, one that, compared with our present antiquated construction methods, would be "twice as good at half the cost."

ROBERT L. DAVISON.



Detail from
Preliminary Sketch
APARTMENT IN CHICAGO
Bowman Brothers,
Architects

ARCHITECTURAL RECORD
TECHNICAL NEWS AND RESEARCH
MARCH · 1930

APARTMENT HOUSE DESIGN TO MEET FAMILY NEEDS

By ROBERT L. DAVISON

With the cooperation of Apartment House Operatives, Authorities on Playgrounds and Children's Activities and Architects specializing in School Planning.

NEXT MONTH, TECHNICAL NEWS AND RESEARCH: ECONOMICS OF OFFICE BUILDING DESIGN

APARTMENT DESIGN TO MEET FAMILY NEEDS

BY ROBERT L. DAVISON

Apartment houses must be designed to meet the present day needs of children, men and women

Very little attention has been paid to the proper planning of apartment houses to meet the needs of children as affected by home conditions under the present economic set-up.

To discover these family needs and the present solutions to these new requirements, we have consulted with, and received a great deal of cooperation from, the following authorities on recreation, education, home life and the care of infants and children:

From Columbia University, Benjamin R. Andrews, Professor, Household Economics; Winifred E. Bain, Instructor in Kindergarten Education; Grace Langdon, Instructor in Kindergarten Education; E. Mae Raymond, Instructor in Kindergarten Education; Mary M. Reed, Assistant Professor Education.

Roy Smith Wallace, Playground and Recreation Association of America.

In addition, we have had the cooperation of Hacker and Hacker, architects, who specialize in school work, in the preparation of a nursery and kindergarten unit for inclusion in the apartment house. This unit was worked out in cooperation with the above group of specialists and has received their hearty approval.

We wish to acknowledge the very kind assistance of Dr. C. V. Paterno in offering practical suggestions and checking the proposals from the standpoint of one of the largest apartment house operators in New York City.

We also wish to express our appreciation of the very helpful assistance of Wallace W. Beicheim and Max Roshovsky of the Columbia School of Architecture.

New social and economic balances due to the transferring of the work formerly done in the home, such as sewing, washing, baking, teaching and care of children, to centralized organizations of specialists is making it necessary for women to go into industry* to assist their husbands in getting money to pay for these services which were previously performed by women in the home.

This necessitates centralized care of children and housekeeping services. The architect should recognize these facts and plan accordingly.

I. CHILDREN

Very little attention has been paid to the proper planning of apartment houses to meet the needs of children as affected by home conditions under the present economic set-up.

Objection to children in apartment houses may be overcome through planning special care for them and segregating their entrance from that used by the adults.

Children, through lack of play space, clutter up the entrance with their go-carts, bicycles, and scooters; make a great deal of noise; muss up the halls, and certainly prevent any attempt at that air of refined celibate gentility which is such an asset in the renting of an apartment house.

These objections may be largely overcome by a separate children's entrance, preferably on another street or, where this is impossible, a side entrance. The entrance lobby should have lockers for toys, athletic equipment, roller skates, rubbers, overshoes, etc., and a place for scooters and bicycles.

This lobby should be attractive enough for the children to feel that it is a privilege to have their own entrance. If possible, the entrance should have access to the main stairs so that the children can reach their apartment without going through the main entrance lobby. If elevators are used it should be possible to have separate entrance to them.

If this segregation is effective and the building is properly soundproofed, practically all objections to children within the apartment house are removed. Since there is generally a scarcity of apartments which will take children, those apartments designed to meet the needs of families should be a profitable investment.

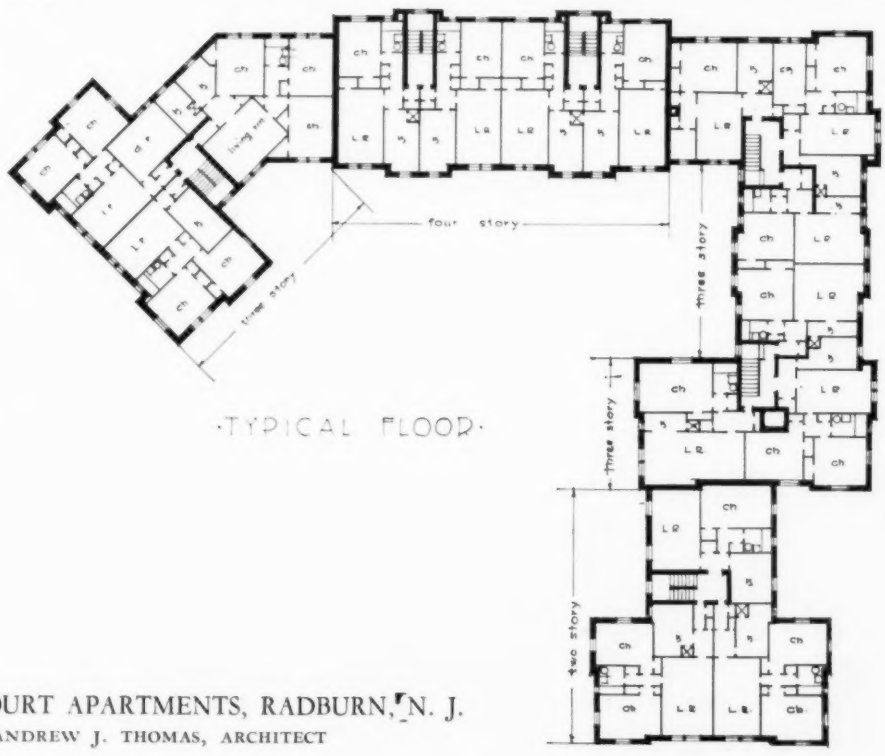
Any special provision for the care of children within the apartment house should be considered as an integral part of the community recreation system and should fit into a general program. It is probable

* "The number of gainfully employed women in the four cities, 38446, constituted over *38 per cent of the entire female population* 14 years of age and over reported in these communities.

"The four cities analyzed in this report from the standpoint of breadwinning women may be taken as more or less representative of the country as a whole in the matter of the family status of the over eight and a half million breadwinning women in the United States.

The breadwinning matrons (women who were or had been married) constituted approximately 55 per cent of all the women included [14 years of age and over]. Almost four-fifths of all the gainfully employed women who were, or had been, married were maintaining a home, and over nine-tenths of those with wage-earning husbands were caring for a household in addition to the performance of breadwinning occupations." Family Status of Bread Winning Women Bulletin of the Women's Bureau, No. 41 U. S. Department of Labor, Wash. D. C.

Photo. Richard Averill Smith



TYPICAL FLOOR

ABBOTT COURT APARTMENTS, RADBURN, N. J.
ANDREW J. THOMAS, ARCHITECT

BUILDING PERSONNEL AND EQUIPMENT REQUIRED FOR CHILDREN OF VARIOUS AGE GROUPS

Question	3 Weeks–18 Mos.	18 Mos.–3 Yrs.	3 Yrs.–4 Yrs.	4 Yrs.-5 Yrs.	5 Yrs.–6 Yrs.
Number of children in unit	Not over 20	Not over 20	Not over 25	Not over 25	Not over 25
Needs of children	Sleep, food, care, educational play	Apparatus for increased activity	Individual ownership and use of materials. Need individual lockers	Addition of constructive activities such as woodworking	Increase of intellectual pursuits. Social grouping calling for nooks, etc.
Schedule of hours of attendance	Approximately 7 A.M. to 6 P.M. depending on working hours when mothers are employed outside of the home. Six days a week all through the year.				
Number of attendants in each unit	2 fully trained 2 assistants	2 fully trained 1 trained maid	2 fully trained 1 trained maid	2 fully trained	2 fully trained
Needs of attendants	Office and rest rooms	Office and rest rooms	Office and rest rooms	Office and rest rooms	Office and rest rooms
Kitchen help	Food prepared by nurses	Nutritionist, cook and maid	Nutritionist, cook and maid	Nutritionist, cook and maid	Nutritionist, cook and maid
Food, Service	Formulae, kitchen	Central cooking kitchen	Central cooking kitchen	Central cooking kitchen	Central cooking kitchen
Playground, indoor, size	Not needed if nursery is solarium	On rainy days, use gym for older people			
Outdoor, size	Not needed	Roof garden with slides	Roof garden with slides	Roof garden with slides	Roof garden with slides
Use of Ultra-violet ray glass		Desirable	Desirable	Desirable	Desirable
Accident prevention	Fire prevention, safety cribs, window guards	Fire prevention, safety cribs, window guards Protect skylights on roof	Fire prevention, safety cribs, window guards	Fire prevention, safety cribs, window guards Protect skylights on roof	Fire prevention, safety cribs, window guards
Cost per child per day	From $1.50 to $2.50 will include rent of nursery space, overhead on equipment and salary of attendants. Food will be extra				

that at first the parents will have to pay for the nursery school and kindergarten within the apartment house but eventually this will probably be incorporated within the public school and recreational system.*

Children, Two Weeks to Six Years

The care, recreation and education of children from two weeks to six years of age can best be handled in small nursery and kindergarten units (see opposite) within a large apartment house** or as part of a group of smaller buildings.

Children, Six to Eighteen Years Old

From the age of six to twelve children need play spaces of five acres or more, and from twelve years on, fifteen or twenty acres. As it is generally impractical to furnish so large a play space in connection with an apartment house, the recreational needs of children within this age group must be provided by the city as a part of the public school, playground or park system. The article by Mr. Henry Wright on page 235 of this issue indicates the relation of the playground to the school and to the apartment. For this age group it is impractical to have small school units within the apartment house. Large schools are needed to provide for proper subdivision and specialization. The only special provision within the apartment house generally needed for most children in these age groups is a separate entrance lobby.

Children over Eighteen Years Old and Adults

From the ages of eighteen years on, children may again be considered as young adults; and then recreational and social activities become a problem for consideration in the design of an apartment house which is intended to meet the family needs.

Adults will be interested in the individualistic games, such as hand ball, which can be played in a limited space and therefore can be provided for within an apartment house. Provision should also be made for dancing and other social activities. See page 274.

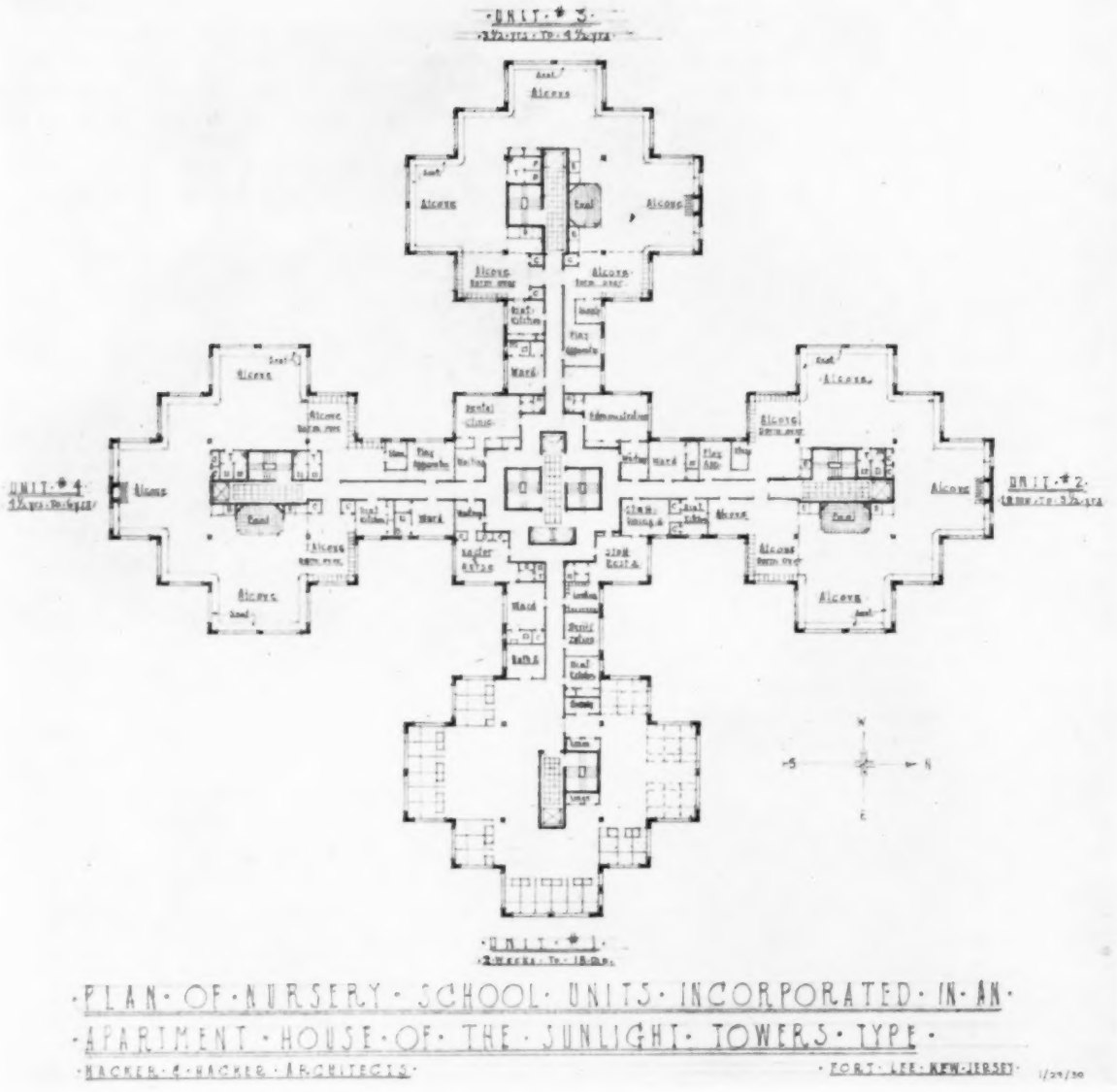
II. NURSERY AND KINDERGARTEN

Trained nurses and teachers can take better care of infants and children than the average parent. Provision of such care during the day would not deprive the child of the influence of parental affection but would probably make the contact with the parent more valuable and pleasant because the mother would not be tired out with continuous care of the children.

There is the additional advantage that such care permits the mother more freedom. There is a very considerable increase in the number of wives who continue to work after marriage.

* Roy Smith Wallace, Playground and Recreation Association of America.

** Also article by Henry Wright in this issue.



(See description below)

The units shown above are designed to take up the entire sixth floor of the apartment house scheme. The plan of the apartment lends itself readily to four age distributions. (1) Those from two weeks to eighteen months. (2) Eighteen months to three and one-half years. (3) Three and one-half years to four and one-half years. (4) Four and one-half years to six years. Each of these four units occupies a separate wing radiating from a central administrative wing. This central administrative wing is of vital importance in the success of the project. It contains the doctors', nurses', and dentists' suite of offices which are essential to the four units. Every mother realizes what it means to have a staff doctor and nurse efficient in both the prevention and detection of illness. Few mothers would be willing to have their children associate with one that has just returned from exposure to a contagious disease unless examined by a staff doctor.

Here are found also the staff dining and rest rooms and general administrative rooms.

The infant group has been provided with individual cubicles for the babies, while the room has been oriented to secure a maximum of sunlight for any possible sufferer from rickets. These cubicles have window ventilation with a heavy screen deflector to do away with the possibility of draft. The room is heated by a unit system which includes ventilation by means of air movement in hot weather, humidifying and air filtering. The accessory facili-

ties such as isolation ward, formula and diet kitchen, bathroom, sterilizing room and storage supply space for linen, have all been provided. Play space has been provided both in the room and on the roof as well as storage space for play materials.

The nursery groups No. 2 and No. 3 have some additional facilities. This group has provisions for rest and relaxation in a two-section balcony. In this room a child that awakes may go down into the main room and play without awakening the other sleeping children. They, too, have toilet, bath and storage facilities for play materials and diet kitchen. In addition the nurseries boast of the essential alcoves, a fireplace and an enchanting spatter-and-wading pool, which not only gives atmosphere to the room but has a definite educational value.

The kindergarten facilities reflect, with the increased growth of the child, the group instinct. Provision is also made for a child's special possessions in cubicles and storage space. One of these alcoves may be used in the advancement of a child's constructive or art impulse. A work bench and similar equipment is provided in one of these alcoves. We find here balconies to solve the rest problem, a diet kitchen for proper nutrition, and a pool and fireplace to lend charm to the room. Play space here, as in all the other units, is provided in the protected roof directly above the unit. The stairs give easy access to the roof where much of the large play apparatus can be utilized to advantage and stored when not in use.

A. NURSERY SCHOOL ROOM AND ITS EQUIPMENT*

The items noted below are selected to meet the needs of *twenty* children, two to four years of age, in a nursery school operating seven hours per day, five days per week, ten months per year.

Building Standards

1. A minimum floor area of 1,200–1,500 square feet should be provided for twenty children, in addition to outdoor play space.
2. *The rooms should be light and cheerful.*
   a. Window area should be at least 25% of the floor area, preferably more.
   b. Artificial lighting should be high and indirect.
   c. Walls should be of hard finish easily cleaned. They should be light tan, buff, or gray.
   d. Ceiling should be cream or white to reflect the light.
   e. Shades should be tan, buff, or gray to harmonize with the walls. They should be adjustable from the center.
3. *The floor should be smooth* without cracks and easily cleaned. Cement or wood overlaid with battleship linoleum is most desirable.
4. *The room should be well ventilated and heated.* Radiators should be placed in out of the way spaces. *Avoid using space under windows for radiators.* It is generally conceded that a temperature of 64° to 68° is desirable.
5. Elimination of injury. Stairways, fire escapes, elevator shafts; and medicine cabinets should be protected.
6. The rooms should be arranged conveniently for work and at the same time they should be attractive.

* From *Nursery School Equipment and Budget*, by Grace Langdon, Department of Lower Primary Education, Teachers College, Columbia University, May, 1929.

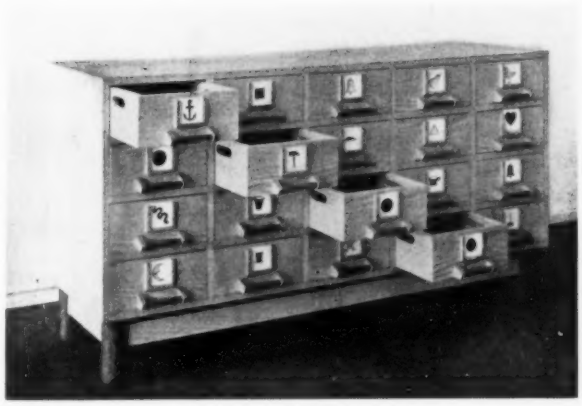
Bauwelt

HOME FOR DEPENDENT CHILDREN
CARLSHAFEN, GERMANY
D. BORKOWSKY, ARCHITECT
Open air balconies are highly necessary for children

B. BUILDING EQUIPMENT FOR KINDERGARTEN

No.	*Materials*	*Standard for Selection*
20	Carpenter-built lockers (open), 36 in. high, 14 in. wide, 14 in. deep, 9 in. additional for hats, 9 in. additional for extra clothing. 54 in. total height.	Open lockers permit child to put away or get out his wraps with a minimum of adult assistance. The additional space above saves cupboard space elsewhere. Lockers should be equipped with one large hook on each side for hanging wraps.
	Shelves, low, open for blocks and play equipment. Length of shelves depends upon available space. 34 in. height overall, 20 in. deep shelves 14 in. apart.	Low, open shelves make it possible for the child to get his play materials independently. Shelves for play materials should be closely adjacent to play space so that the child does not need to go far for equipment.
	Cupboards — about 34 in. over all, 20 in. deep for play materials, shelves 14 in. apart.	Doors to cupboards should have catches which make it possible for child to open and close them without help.

	Cupboards, adult height for dishes, extra linens, etc. Often convenient to have large drawers with cupboards above.	Should be placed in space which cannot be utilized for play space, but as close as possible to the place where articles kept will be used.
	Drawers	Children like to pull drawers in and out, and to put things in them. They should be in easy reach. Handles should be of a kind that child can take a hold of easily with *an overhand grasp*. (See right.)



CHEST OF DRAWERS FOR CHILDREN
Montessori Experimental School, Aachen, Germany
DESIGNED BY SCHWARZ ANS SCHWIPPERT
The handles are designed for the overhand grasp which is natural to children

C. PLAY APPARATUS

No.	*Apparatus*	*Standard for Selection*
	Sand boxes. Outdoor—Zinc lined. Size depends upon available space. If possible it should be large enough for several children at a time to get into. A desirable size is 12 ft. by 12 ft. by 12 in. to 18 in. high. Cover should fit closely enough to prevent rain and dirt getting into sand. Indoor—Zinc lined on castors. Minimum size 3 ft. x 6 ft. by 18 in. high. Ledge about 10 in. wide on two sides. Sand box lid should be made in sections so that children can remove them. Holes bored in lids let the air in and keep sand from becoming moldy.	Children enjoy playing in the sand pouring it from one dish to another, letting it run through their fingers, digging their toes into it, making molds in different shapes, etc. The sand offers an opportunity for manipulation, experimentation, and creative play. For the younger children who should not be on their feet for long periods, it is a satisfactory place for play. A ledge around the box provides a place for setting dishes or piling sand. It should be about 10 in. wide. Because of limited space the indoor box is usually smaller than the outdoor, so that the children stand on the outside to play. A ledge on two sides only provides space for dishes, etc., leaving two sides for smaller children who cannot reach over the ledge easily. Plenty of sand toys should be provided.
1	Drinking fountain. White porcelain with nickel fittings. 15½ in. from floor. Handle 10 in. from floor.	Fountain with spray from side of bowl is most desirable since it prevents touching the opening with mouth and is high enough to prevent water from flowing back over it while child is drinking.
1	Slide 3 ft. or 5 ft., depending on size of children.	Provides good physical activity. Gives opportunity for adventure. Should stand solidly so that it will not teeter as child ascends the ladder. Wooden bedway is more satisfactory for small children than metal since it does not become so slippery. The last foot or two of slide should be parallel to the floor rather than ending abruptly, since it breaks the force of landing and prevents spinal injury.
4	Bulletin boards. May be cork, framed and hung in available space, or very low single or double easel covered with cork or burlap. Latter about 38 in. high by 24 in. wide.	Needed for pinning up pictures to be used temporarily. Should be low enough for children to see the pictures easily.
1	Fire extinguisher. (More if number of rooms make it advisable.)	Should be placed so as to be easily accessible. All teachers should know how to operate it.

D. BATHROOM EQUIPMENT

Toilets

1. Twice-fired vitreous china is easily cleansed and durable.

2. The height should be 10 or 11 inches from the floor, to enable the feet to touch the floor.

3. The "hidden tank" and fixtures are cheaper for the city, but a tank is often necessary for the country, due to the low water pressure.

4. A seat open at the front is desirable for sanitary purposes.

5. Two seats are sufficient if there are chambers, but three proves more satisfactory for twenty children.

Bowls

1. Cork and chain less likely to overflow with children.

2. Enamel handles instead of metal although said to be less durable, yet are larger, and would use the larger muscles in the child's hand.

3. Without a base or pedestal makes it possible to regulate the height of the bowls—24 inches with stools.

4. A "back" is necessary to protect the walls from the child's splashing.

5. Two faucets, instead of one are desirable to give children the experience of regulating the temperature of their water in a simpler manner. The single faucet might be too complex.

6. Three or four bowls are necessary for twenty children, four if possible.

Wash Sink

1. Long and narrow sink chosen in preference to the single deep tub depends on space. It is easier to rinse out child's bibs, etc.

2. A cork and chain must be specified.

3. Acid-resisting provides for ready cleaning.

Drinking Fountain

1. Can be placed 24 inches from ground on standard. A small platform should be built around it for the smallest shildren.

2. This standard is sometimes necessary for the roof fountain, or outdoor one, but should be covered or under a shed.

3. The water pressure should be regulated for young children.

4. The handle should be easily pulled down to get a drink by a child.

E. SPACE REQUIREMENTS FOR APPARATUS ON CHILDREN'S PLAYGROUNDS

In the following table* are given the dimensions and approximate use areas of several types of apparatus frequently installed on children's playgrounds. Since the types of equipment made by the various manufacturers differ somewhat, the dimensions and areas given are merely suggestive. Furthermore, it is not likely that all of the apparatus listed will be found on a single playground. It is desirable to provide safety zones around all apparatus especially that which is movable.

Type of Apparatus	Dimensions of Apparatus: Length in Feet	Dimensions of Apparatus: Height in Feet	Approximate Use Space Requirements in Feet	Space in Square Feet
Circular traveling rings	10 ft. dia.	12	25 dia.	490
Gang slide	16	8	20 x 45	900
Giant stride		12	32 dia.	804
Horizontal bar	6	8 upright	12 x 20	240
Horizontal ladder	16	7½	8 x 24	192
Merry-go-round	10 ft. dia.		30 dia.	707
Sand box on table	Size and shape varies 6 x 10 to 10 x 20		12 x 16 to 16 x 30	
Slide	16	8	12 x 30	360
Slide—spiral	35	18	25 x 35	875
Swings—set of 3	15 at top	12	30 x 35	1050
Swings—set of 6	30 at top	12	30 x 50	1500
Teeters—set of 4	12–15x	2½	20 x 20	400
Traveling rings—set of 6	40 at top	14	20 x 60	1200

*Courtesy of Playground and Recreation Association of America.

III. ADULT RECREATION AND SOCIAL ACTIVITIES

1. *Provision for Recreation*

Adult recreation and social activities should be considered as an integral part of the community recreation system and should fit into a general program.

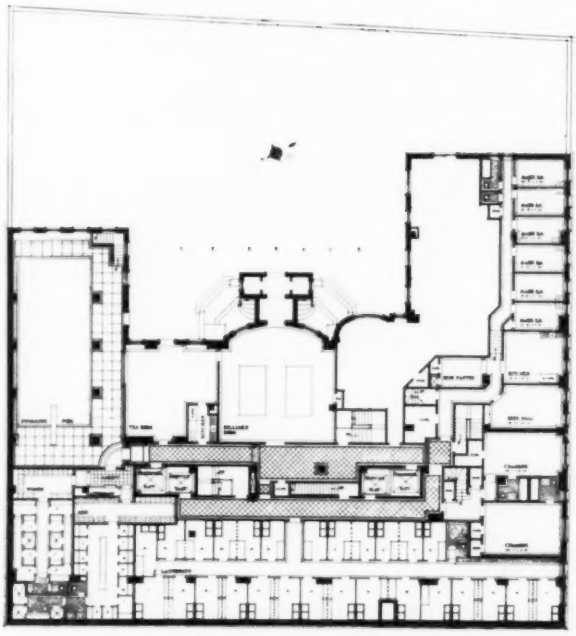
The games that the majority of adults actually practice and play are those which require individual skill, such as golf, tennis, hand ball, etc., rather than games requiring team playing, such as baseball, football, hockey, where their interest is generally that of a spectator.

Playground experts and instructors generally agree that games which require two to four participants and which were learned in school, college, or local recreation centers are generally the ones practiced or played in clubs or homes. Games that require a greater number of participants or an instructor are not satisfactory.

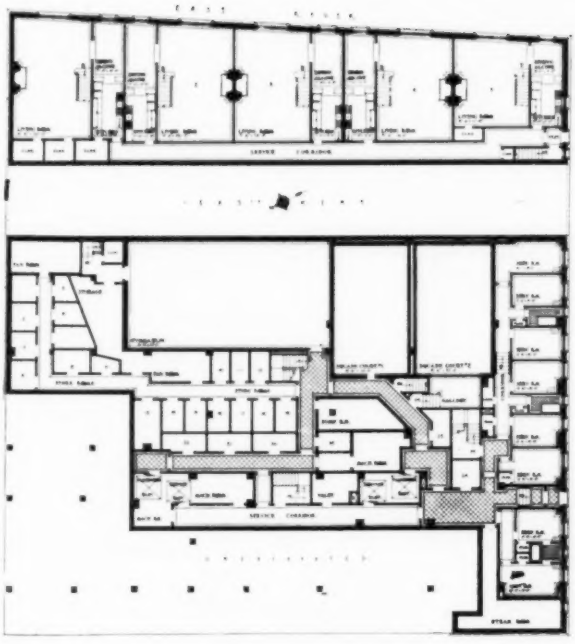
The success of a recreational system within an apartment house will largely depend on proper *supervision of the schedule* for the use of various facilities such as courts, game rooms, and social parlors. The following games comply with these requirements and are suitable for inclusion in an apartment house. It is not intended to suggest that separate space should be provided for all these games, because many can be played on the same area:

ONE BEEKMAN PLACE, NEW YORK CITY

SLOAN AND ROBERTSON, ARCHITECTS,
CORBETT, HARRISON AND MAC MURRAY, CONSULTING ARCHITECTS

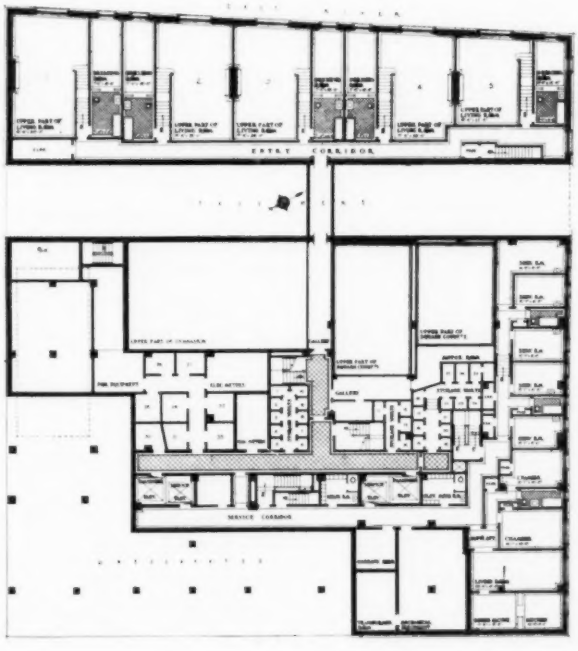


FIRST BASEMENT



THIRD BASEMENT

SECOND BASEMENT



Squash courts, recreational parlors, billiard room, swimming pool, and community accommodations in three basement floors.

SPACE REQUIREMENTS FOR GAMES AND SPORTS WHICH CAN BE PROVIDED IN AN APARTMENT HOUSE

Name	Dimensions of Play Areas	Use Dimensions	Space Required (sq. ft.)	Number of Players
Clock Golf.....	24′ Circle	30′ circle	706	Any number
Croquet.....	30′ x 60′	30 x 60	1,800	Any number
Hand Ball.....	20′ x 30′	30 x 42	1,200	2 or 4
Hand Tennis....	16′ x 40′	25 x 50	1,250	2 or 4
Paddle Tennis...	18′ x 39′	26 x 57	1,482	2 or 4
Roque.....	30′ x 60′	30 x 60	1,800	4
Shuffle Board....	10′ x 40′ to 50′	15 x 50 or longer	750	2 or 4
Volley Ball.....	30′ x 60′	40 x 80	3,200	12–16
Squash Racquets				
Single Courts.		18½′–32′ (16′ Ceiling)		
Double Courts.		35–45		

Above areas may be used for Boxing, Wrestling and Jiu Jitsu, Bag Punching, Medicine Ball, Pulley Weights, Rowing Machines.

2. *Games of a Semi-Social Nature*

Commercial pool rooms in an apartment house are distinctly unsatisfactory because they attract an undesirable patronage. But pool and billiard tables may be included if there is a tenants' club, though they will require proper supervision.

Recreation in Social Parlors

Social parlors of various sizes should be provided for rental for card parties, teas, receptions, dinner parties or dances.

A ball room at least 24 ft. x 36 ft. should be provided. This room may be used for dancing classes for young children during the day and in the evening for radio or victrola dances for young people or adults. This room should have a small stage at one end where amateur theatricals may be given and provision made for the showing of benefit, instructional or children's movies. A fireproof projector booth should be included as part of the structure.

The parlors and ball room should be accessible to service from the restaurant.

Ample closet space should be provided for storage of card tables, folding ping-pong tables, chairs, and rugs when the hall is used for dancing.

Lawn Games

Croquet has certain advantages which recommend it for inclusion in the landscaping of apartment house grounds. It only requires an area of 30 ft. x 60 ft. There is practically no upkeep required since the players generally own their own mallets and balls.

Clock golf, which requires a circle of only 30-foot diameter, is another game which lends itself to an apartment house layout.

IV. CENTRALIZED APARTMENT HOUSE SERVICES

Naturally the amount and character of service will depend largely on the type of tenant but for a large apartment the following services will frequently be found to be desirable. The architect must provide locker rooms, rest rooms, and other special plan requirements for this service, personnel, and equipment.

1. *Maid Service*

The servant problem is met in a satisfactory manner in many apartments by the building management employing maids on a full time monthly basis and supplying the various tenants with part-time service when needed. One maid for approximately twenty-five tenants will generally be sufficient. One apartment employs maids at a salary of $60 a month and supplies the tenants with maids for fifty cents an hour. These maids do cleaning, cooking, or table service, and also stay with children in the evening. It has been the experience of this company that maids, though on duty from nine to five, average five hours work a day. This gives the company a gross return of approximately $20 a month per maid which takes care of the salary of chief housekeeper and maintenance of vacuum cleaners and other cleaning equipment owned by management; and it also returns a profit.

This maid service may be used for preparing meals in individual apartments or serving meals obtained in part or whole from a community kitchen.

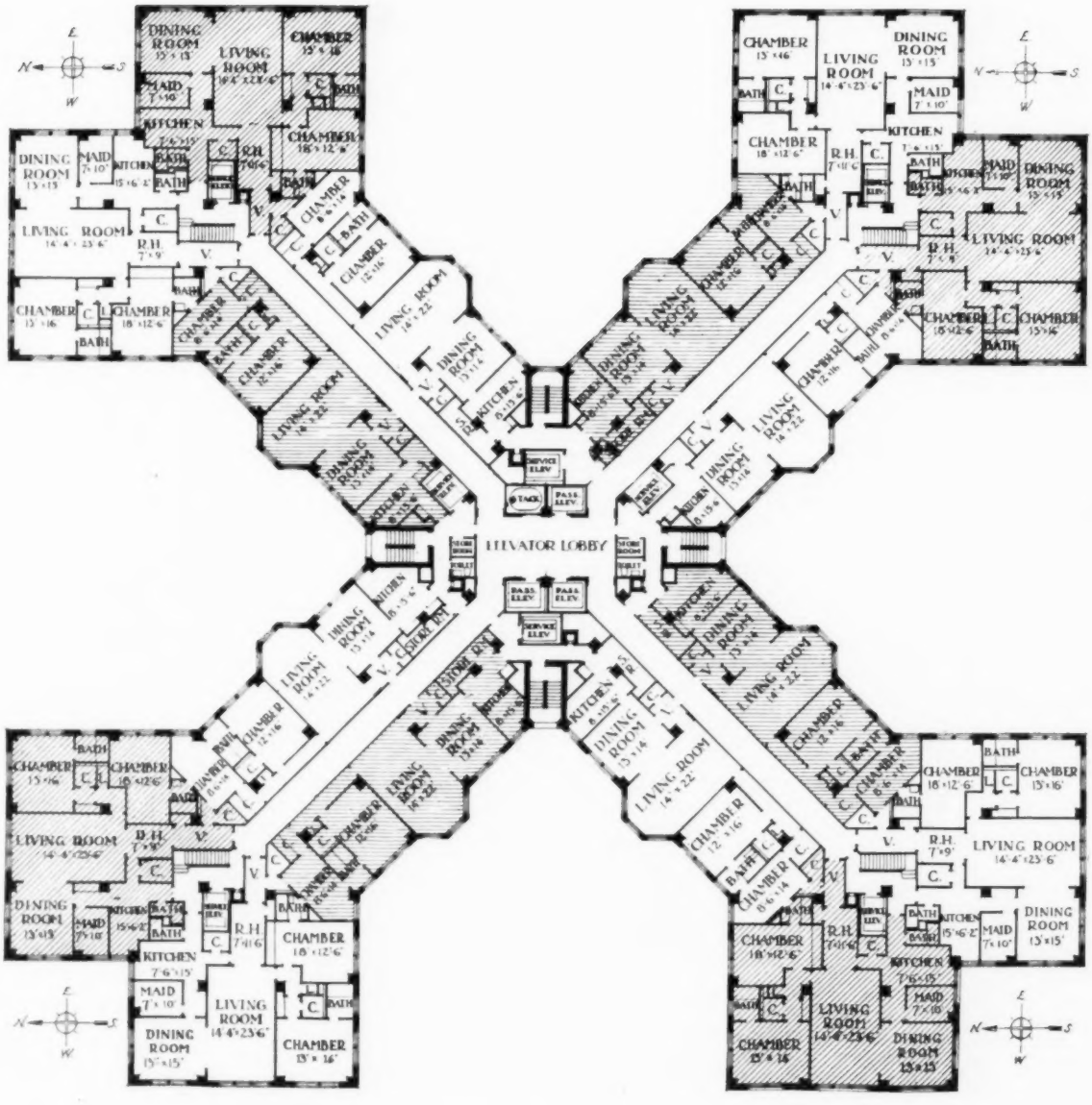
2. *Community Kitchens*

There has been considerable difference of opinion as to the advisability of establishing community kitchens in apartment houses. In a recent questionnaire* it was found that very few desired to make regular use of a central kitchen, although a considerable number indicated a desire to make occasional use of such a facility.

Centralized kitchen and food service, while it reduces the inefficiency of the individual preparation of meals, has not been a success when done on a cooperative basis,† due to lack of proper management and the failure of the members to use the service regularly. However, delivery to apartments of food from a central kitchen, when secondary to a restaurant or delicatessen, has proved successful when conducted as a commercial enterprise. The restaurant to be successful must be on the street and in a neighborhood which will give it patronage, since it will probably not be successful if heavily dependent on the tenants of the building. In planning for

* Questionnaire sent to members of the faculty of Columbia University, who were interested in a proposed cooperative apartment.

†Cooked Food Supply Experiments in America. Alice Peloubet Norton, Smith College.



TYPICAL FLOOR PLAN

EDGEWATER BEACH APARTMENTS, CHICAGO

BENJAMIN H. MARSHALL, ARCHITECT

A large apartment development showing the present tendency to concentrate every sort of service in a central plant.

THE PLAN *is such that all rooms (except a few baths) have outside exposure. Three fourths of the apartments have a view of Lake Michigan.*

SHOPS *within building; garage with automobile accessory shop connected directly to lobby.*

A RESTAURANT *and electrically equipped central kitchen provide every tenant with hotel food service; maid service is optional. Community laundry.*

SWIMMING POOL, *beach promenade, gardens and lawns, children's playground, tennis courts, putting greens.*

KITCHENS *within apartments have automatic refrigeration, laundry tray under hinged drainboard of sink, small gas clothes dryer, ironing boards, and Pullman tables.*

SERVICE ELEVATORS AND INCINERATORS *at each rear entrance.*

EDGEWATER BEACH APARTMENTS, CHICAGO

BENJAMIN H. MARSHALL, ARCHITECT

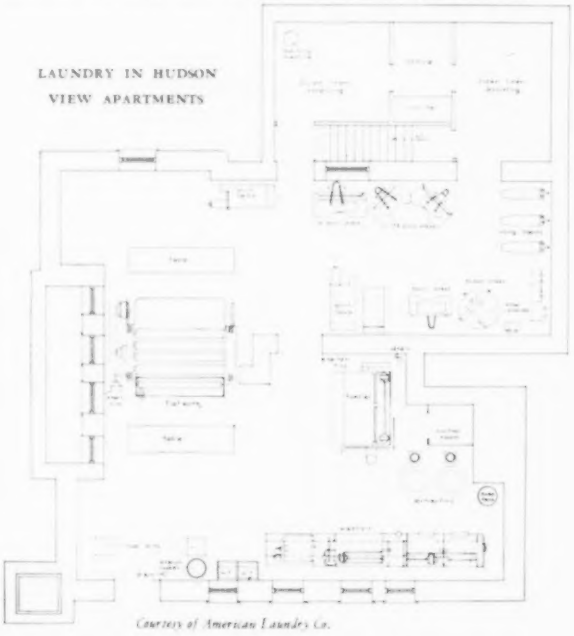
(See plan on previous page)

this service in a building the kitchen should be made readily accessible to the dumb waiters or service elevators.

If there is a nursery and kindergarten in the building a small kitchen should be provided, but a central kitchen may be used if there is one.

3. *Central Laundry Service*

There are various ways of handling the laundry problem. The general practice has been to provide laundry trays in each kitchen. Many apartments also have laundry trays and domestic laundry dryers in the basements, but the general experience has been that this equipment has not been used very much. Many recent apartments have omitted this equipment. Some large apartments have provided completely equipped laundry plants which are operated by the management on the same basis as commercial laundries except that with the elimination of delivery service and the cost of soliciting business they are operated at a considerable saving, part of which is passed on to the tenants through reduction in prices. There is the additional advantage to the tenants of very fast service. See accompanying plan.



LAUNDRY IN HUDSON VIEW APARTMENTS

Courtesy of American Laundry Co.

4. *Centralized Annunciator 'Phone Service*

By connecting telephones in the entry halls with a central operator, rather than direct to the apartment, it is possible for an apartment house with many separate entrances to have the advantages which generally come from the central entrance lobby with an information desk and telephone girl.

5. *Receiving Room Service*

An automatic self-locking delivery receptacle for wall or door installation obviates the necessity of delivery-men entering the apartment by providing an outside depository for packages, parcels, etc.

For the most expensive type of apartment a central receiving room will generally be desired. This receiving room should be equipped with a refrigerator unit for storage of perishable goods.

6. *Mechanical Equipment*

Centralized control of hall, foyer, and exterior lights.

Separate circuits for morning, evening, and night lights, which permit central control, will be found to result in a saving of current and superintendent's labor. In a cooperative apartment for 354 families (Hudson View Apartments) where this system was installed, at an additional cost of $14,000, the management estimates that the saving in current and labor will pay for this installation in two years,

7. *Automatic Elevators*

Recent improvements in elevator equipment eliminate the difficulty previously experienced due to failure of tenants to close the inner gate when leaving the car. These improvements give satisfactory service in buildings of limited height, combined with considerable saving in operation costs.

8. *Heating*

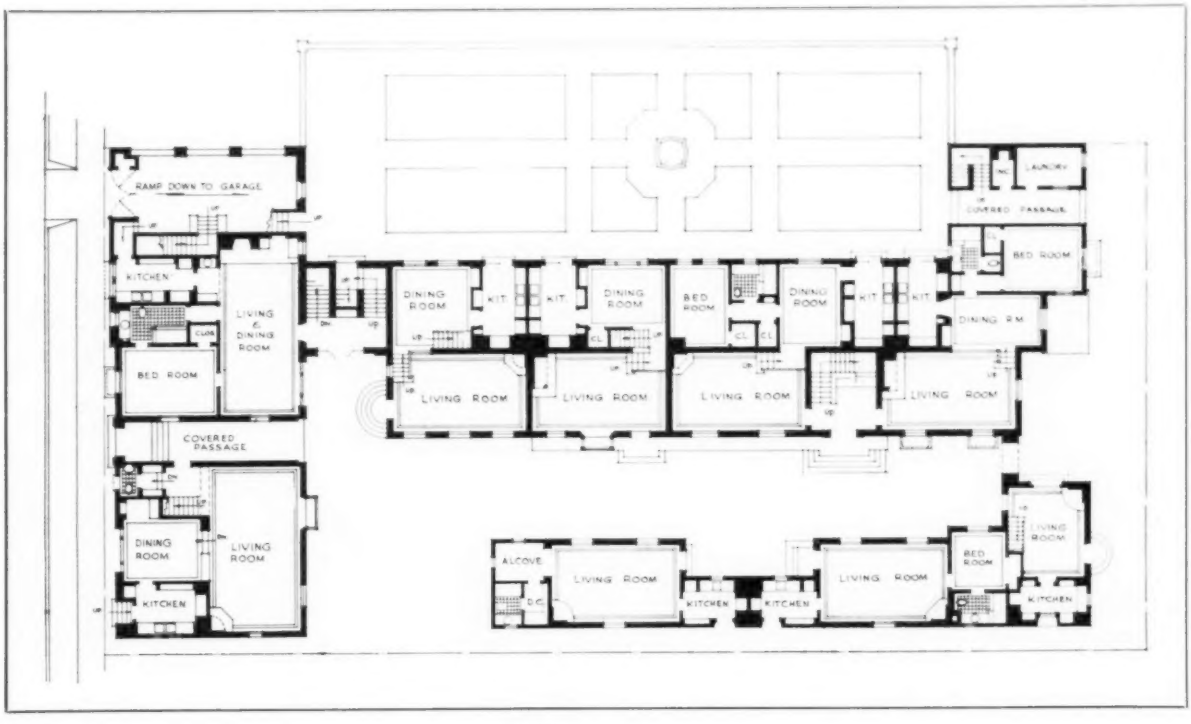
Theoretically, the ideal solution would be in an automatic unit heater and ventilator within each apartment room. At the present time there are no individual automatic coal or oil burner units which would be satisfactory for use in small individual apartments. It will not be economically profitable to use gas-fired water or steam units in most localities having severe winter weather until we improve the insulation of walls and windows. In addition we should reduce the heat absorption of the wall to a point where it may be brought to room temperature in five minutes, using four times the heat required to maintain room temperature once the wall and room are heated. (It now requires three hours to bring the inside surface of a plastered eight-inch brick wall to room temperature using four times the heat required to maintain room temperature.) If the room can be brought to room temperature in five minutes or less it will not be necessary to keep bedrooms or other rooms warm when not in use, and this decrease in heating time will more than balance the added cost of gas or electricity over a centralized heating system utilizing coal or oil.

With present construction methods the central heating system is probably the only solution possible. If water system is used the temperature may be regulated to the weather conditions. If steam is used it is desirable that automatic intermittent control valves be used on steam lines. These valves will permit steam to reach the radiator at desired intervals and greatly reduce heat loss particularly in mild weather. This central heating plant may also furnish steam power for a central refrigerator plant and for use in the laundry.

Photo. Matt Studios

An apartment with garage under garden court. The garage doors are opened by inserting key in standards at edge of curb

VIEW FROM STREET



FIRST FLOOR PLAN

THE RONDA APARTMENTS, HOLLYWOOD, CALIF.

ARTHUR ZWEBELL, ARCHITECT

There is a mistaken idea, on the part of many building owners, that steam power used for mechanical equipment or running a central refrigerator system does not cost anything if the steam is afterwards used for heating purposes. Although heat may be a by-product of a power plant, power is not a by-product of a heating plant. To produce power it is necessary to use considerable extra fuel to gain the additional pressure.

4. *Radio Equipment*

Practically all apartment houses are wired for radio, either running wires to a central antenna on the roof or, in some of the larger apartment houses, a central receiving station is established and the program relayed to individual loud speakers. The number of programs which one may choose from, varies. The Statler hotels provide a choice of two programs. Some apartment houses permit a selection from four stations. In addition, one may phone to the reception room and have a particular station tuned in. One very important advantage of the central system is that it enables the management to control loudness and also hours during which the radio may be used.

5. *Built-in Equipment*

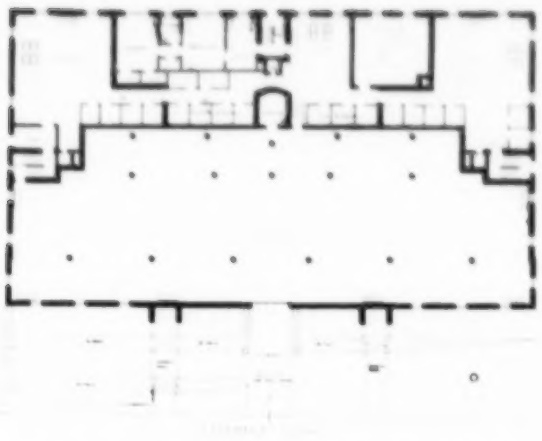
Recent years have seen a very great increase in built-in equipment. This movement originated in California and is now gradually penetrating the east. A recent questionnaire has shown that the prejudice against the built-in beds and other forms of built-in equipment is giving way in the face of economic necessity.

V. OTHER SERVICES

1. *Garages*

There is a decided increase in the trend to incorporate a garage in an apartment building or to have it adjacent to and connected with the apartment house. See plan below.

In considering the advisability of incorporating a garage in an apartment house the rule of thumb that the lot cost should not exceed the cost of the building will be found helpful. Assuming the garage to cost $2.50 per square foot of floor area, the land should not cost in excess of $2.50 for a one-story building, $5.00 for a two-story building or $7.50 for a three-story. This same figure can be used to determine how deep it will pay to excavate under an apartment house for a garage. If excavation costs $1.00 per cubic yard, that is equivalent to $1.00 per square foot nine feet deep. From this it can be seen that it will often pay to excavate for a garage rather than build it at street level, providing that the build-



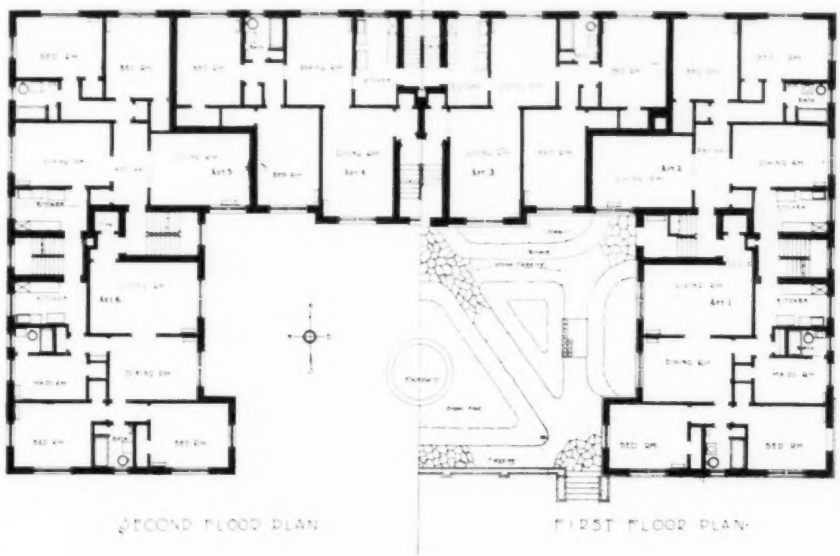
BLUE RIDGE APARTMENTS, ST. LOUIS
PLEITSCH AND PRICE, ARCHITECTS

Garage at front and across the entire site. Laundry and individual storage rooms at rear.

BLUE RIDGE APARTMENTS, ST. LOUIS

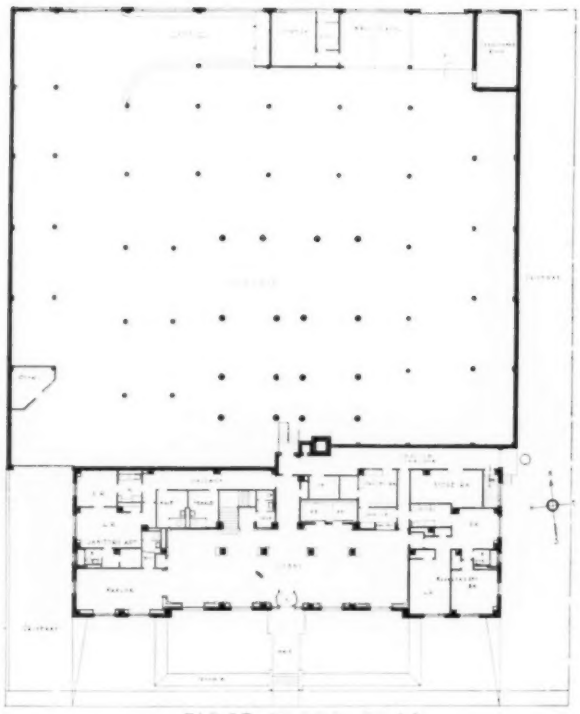
PLEITSCH AND PRICE, ARCHITECTS

Apartment suites of variable size on upper floors. A garden terrace surmounts garage space on street level with entrance at center.



SECOND FLOOR PLAN

FIRST FLOOR PLAN



HAWTHORNE APARTMENTS, ST. LOUIS
PLEITSCH AND PRICE, ARCHITECTS

Garage accommodation at rear of site with direct access to apartment elevator hall. Reception rooms with janitor, storage and other service are confined to the first floor area.

•

ing and fire codes permit this. It should be remembered that special provision must be made for ventilation, to prevent asphyxiation and to prevent fires or explosions from gasoline fumes.

The garage should have space for parking cars of visitors. One of the most recent zoning ordinances provides that an apartment house shall provide parking space of sufficient area to accommodate *one car for each family housed and that such space must be reserved for use by tenants of the building or their guests.*

Garage design data: Parking width 6 ft. 9 in. x 15 ft. deep with 20 ft. aisle. A three-car bay should be 20 ft. in the clear. Ramp grades may be from 12° to 15°. It will require a total floor area of from 200 to 280 square feet per car depending on the type of ramp system used and the size and shape of the lot.*

2. *Stores*

Although stores are frequently objected to in apartment houses, the additional income to be derived from this source makes it worth while to attempt to overcome these objections through proper planning. Generally speaking the store rent should carry the interest and taxes on the land. Examples of this may be seen in some of our best hotels and apartment houses. In some cases the effect of "living over a store" is eliminated by having the entrance to apartments from a large central court. (See accompanying plan and photographs of the Boulevard Apartments in Chicago.) In other cases the entrance to apartments is from a side street.

3. *Size of Apartment House*

Experienced operators are of the opinion that to obtain economical operation of centralized equipment and services an apartment house should have at least 200 families. There will be some additional savings in units over this size but the savings will not be proportionate. A 400-family apartment would cost about $80 per apartment as compared to $186 for a 100-family apartment.

	Per 100 Families		Per Additional 100 Families	
	Persons	Cost	Persons	Cost
Superintendent	1	$2,500	None	None
Porters	3	3,000	3	$3,000
Scrubwomen	2	2,000	1	1,000
Gardner	1	1,500	None	None
Engineers	2	3,600	None	None
Handyman	1	1,500	None	None
Electrician	1	1,500	None	None
Telephone Operators	2	3,000		
Total	13	$18,600	Additional	$4,000
Per Apartment		$186		$113

VI. RENT

There are several ways of figuring rent. How much can the tenant pay; what should the rent be to bring a pre-determined income on the investment; what are the average rentals in that particular locality? Rent will be considered from these three angles.

First, the average apartment house tenant if depending solely on his own income can probably not afford to pay over thirty-five dollars a month for rent.* If his wife or some member of his family works, this amount may be increased to approximately sixty dollars a month. If the wife works, they must remain childless or some provision must be made for the care of children, either by central nurseries as suggested in this article or by some relative living with them. If the family income is sufficiently large for the employment of a maid or nurse it is probably sufficiently large so that it is not necessary for the wife to work.

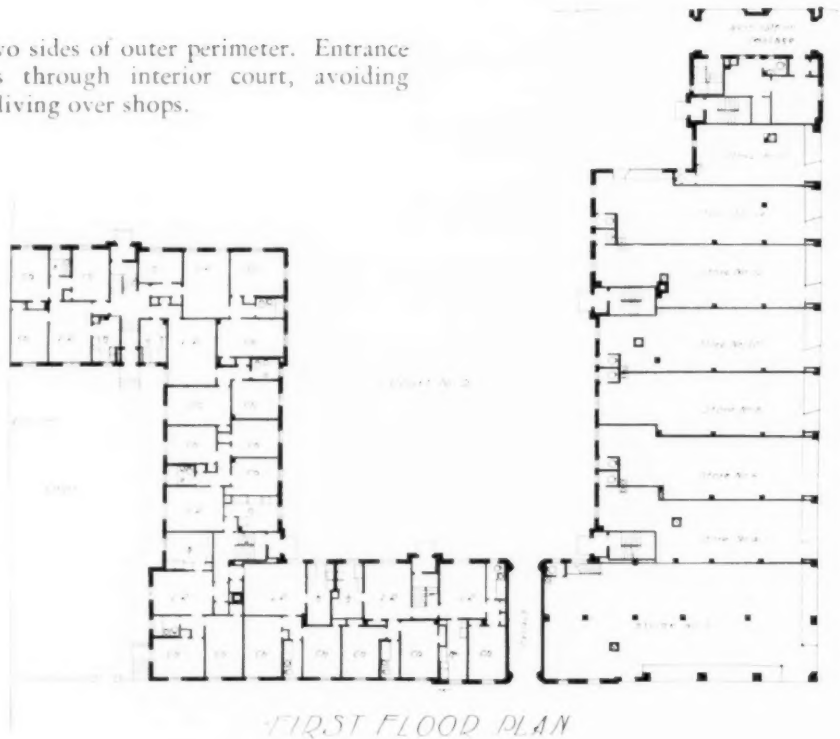
Second, assuming that the rent is to be determined on the basis of giving a pre-determined income

* For further details on garages, see February, 1929, issue of THE ARCHITECTURAL RECORD.

* Eighty-six per cent of those gainfully employed in the United States receive less than $2,000 per year. Assuming one week's income as maximum for one month's rent we have a maximum rent of $38.40, unless there is additional income from some other member of the family.

INTERIOR COURT

Stores on two sides of outer perimeter. Entrance to apartments through interior court, avoiding appearance of living over shops.



FIRST FLOOD PLAN

MICHIGAN BOULEVARD GARDENS, CHICAGO

E. H. KLABER AND E. A. CRUNSFIELD, JR., ARCHITECTS

of approximately 8% on the capital invested, it will be necessary to consider a combination of four basic factors. (1) Carrying charges on land cost, (2) Carrying charges on building cost, (3) Financing, and (4) Maintenance. For analysis it is convenient to group financing costs under land and building, respectively, including a reasonable return or profit on the investment involved in each field. The items of losses due to normal vacancies and renovation are grouped under maintenance.

Thus, land charges include interest, financing, taxes, site development.

Building charges include interest, financing, taxes, depreciation or amortization.

Maintenance charges include management, services, vacancies, and renovation.

Because of the wide variation in high financial bonuses and wide margins of profit necessary to absorb risk, bad judgment, unfortunate extravagance of tenants, etc., it is necessary to use, for re-

*CARRYING CHARGES THREE-ROOM APARTMENT
(Theoretical Set Up)

I Land	
200×200×$4.00=$160,000	
$160,000—200 units=$800 per unit	
$800+10% Financing×(7% Interest+2% Taxes)=	$80.00
II Building	
7,775 @ $.55=$4,276	
4,276×12.67%†=	540.00
III Maintenance	135.00
Vacancies 3%	25.00
Section under 8 stories, Total per year	$780.00
Section under 8 stories, Total per month	65.00
Additional per month for Section over 8 stories	
Elevator $6.20; Bldg. $3.80	10.00
Section over 8 stories, Total per month	$75.00

* For complete details of this method of figuring rent, see pages 237-245 and 301 in March, 1929 issue of THE ARCHITECTURAL RECORD.

† Cost: 10% Financing × (7% interest, 2½% amortization, 2% taxes)=12.65%.

*CARRYING CHARGES FOR THREE-ROOM APARTMENT
(Average of 48 apartments throughout the United States)

	Nat. Assoc. Bldg. Owners and Mgrs., 1928 Average Percentages	Monthly Rent for Three-Room Apt.	
		8 Story Sect.	32 Story Sect.
I LAND			
200×200 @ $4=$160,000			
$160,000÷200 apts.=800 per apt.	Per Cent of Value		
$800÷12 months	5.95%	$3.90	$3.90
II BUILDING			
$.55×7,776 cu. ft.=$4,276			
$4,276÷12 months @	5.95	21.20	25.00
.65×7,776 cu. ft.=$5,053			
$5,053÷12 months @	5.95		
41.86% of Rent		25.10	28.90
III OPERATION MAINTENANCE AND VACANCIES			Additional elevator service, 6.20
	Per Cent of Rent		
Fuel	5.47	3.28	3.28
Wages	7.95	4.77	4.77
Supplies	1.03	.62	.62
Electrical Current	1.49	.89	.89
Water	1.05	.63	.63
Management	4.84	2.90	2.90
Paint and Decorating	5.51	3.30	3.30
Plumbing and steam fitting	2.14	1.28	1.28
Electrical	.80	.48	.48
Carpenter	.94	.56	.56
Other repairs	1.69	1.00	1.00
Taxes	10.68	6.41	6.41
Insurance	1.30	.78	.78
Other Expenses	1.92	1.15	1.15
Total	46.81%	28.05	34.05
Vacancies	11.33%	6.80	7.05
Per Cent. of rent for interest on land and buildings	41.86%		
Rent per three-room apartment (Average for survey was $19.14 per room)	100%	$60.00	$70.00†

* Average of maintenance, operating and income return from 48 apartment houses located in various cities throughout the U. S. 1928 Apartment House Experience Exchange. (Copyright National Assoc. of Bldg. Owners and Mgrs., 134 South La Salle Street, Chicago.)

† Although a $20 a month rent per room is in line with current real estate practice there are "limited dividend housing companies," which are renting and selling apartments at from $9 to $15 per room per month. By using economy in construction and low cost money combined with cooperative ownership it should be possible to bring the rent of the accompanying apartment house scheme within this price range or $36 to $45 per apartment.

liable comparison, a type of moderate but adequate financing which is perhaps not as typical of actual practice as might be desired.

We will allow 10% on the actual cost of both the land and building to cover the cost of financing, carrying charges, etc., until the building is ready for occupancy—and 7% interest on the resulting amount which, together with 2½% amortization and depreciation of building cost* should be sufficient to pay for loan renewals, interest on 60% first mortgage, and interest on—and retirement of—second mortgage in 10 or 12 years; and pay about 8% on the equity. If the building is well managed and vacancy losses do not exceed the allowance in the maintenance budget, the owner should receive an increased earning on his equity after this time. Larger margins are frequently allowed and suburban locations may have to pay higher rates on a reduced proportion of first mortgages. These assumptions are, however, sufficiently representative for our purpose for projects in Eastern areas.

Third, if the rents are to be determined on the basis of the average operating and maintenance costs, and the return on the investment and rent per room in a particular neighborhood, figures for the country as a whole as given by the National Association of Building Owners and Managers are suggestive of actual conditions. The return on the investment as given is probably too low and no provision has been made for amortization and depreciation, but on the other hand, the allowances for maintenance and operation are rather high. It is possible that maintenance is sufficiently less in the early years of the life of these apartments to take care of the items of depreciation and amortization.

* This division of 7% interest and 2½% for amortization and depreciation is an arbitrary but convenient manner of separating the charges which appertain to land and building costs. It represents a complete series of factors which include profit in the return on the owner's equity and a continually changing relation between interest and amortization due to the liquidation of both first and junior mortgages.

Photo, Maas

BATHROOM WITH GLASS-ENCLOSED TUB

TOWN HOUSE APARTMENT, LOS ANGELES

NORMAN ALPAUGH, ARCHITECT

CORRECTION

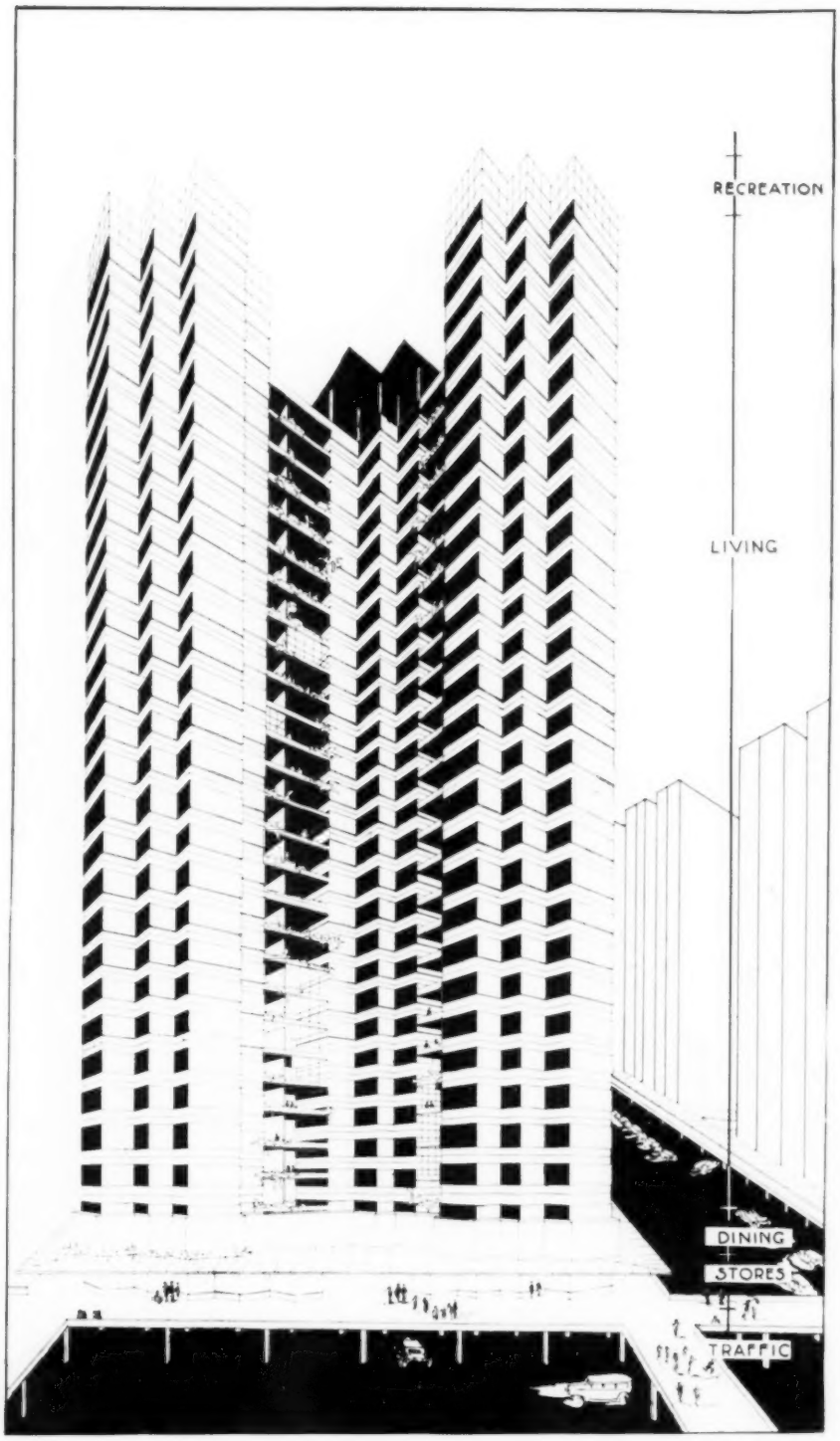
In the February issue two errors were made in the ascription of houses. One concerned the owner and the other the architect. THE RECORD apologizes to *Mr. Theodore L. Bodenwein* for having assigned his house, of which Mr. Frank J. Forster is the architect, to a non-existent Mr. Bodenweiser and it wishes to add to the caption on Page 114 of an illustration of "A Standard House" that the drawing was from *Edmund B. Gilchrist, Architect*. Mr. Gilchrist was associated in the planning of the Wyandotte, Michigan, housing development under the War Emergency Housing Corporation.

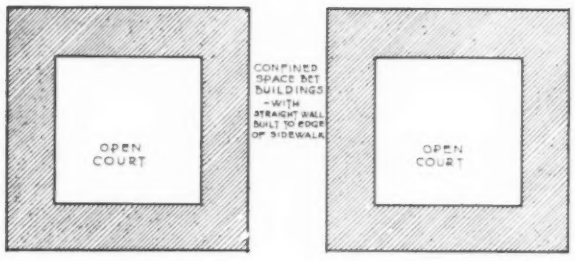
SUNLIGHT TOWERS

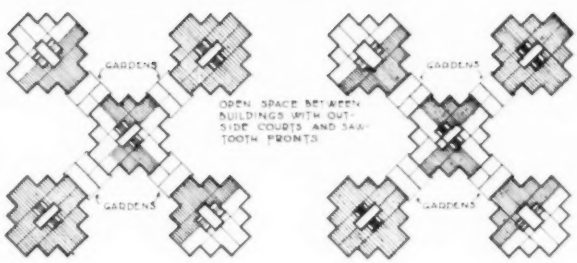
(An Apartment House)

A. LAWRENCE KOCHER AND GERHARD ZIEGLER, ARCHITECTS

Diagram of sawtooth units vertically repeated. The building is diagonally planned so as to give space back to the streets and to admit sunlight and air to all rooms. Each apartment is given a garden and all rooms have exposure and view in two directions. (See ARCHITECTURAL RECORD, March, 1929, p. 307–310.) There is a clear definition between traffic, stores, dining living space and recreation areas. The building is designed not as sculpture with a flat facade and accidental setbacks but as a direct utilization of rooms for city life. The separation of auto and foot traffic is imperative



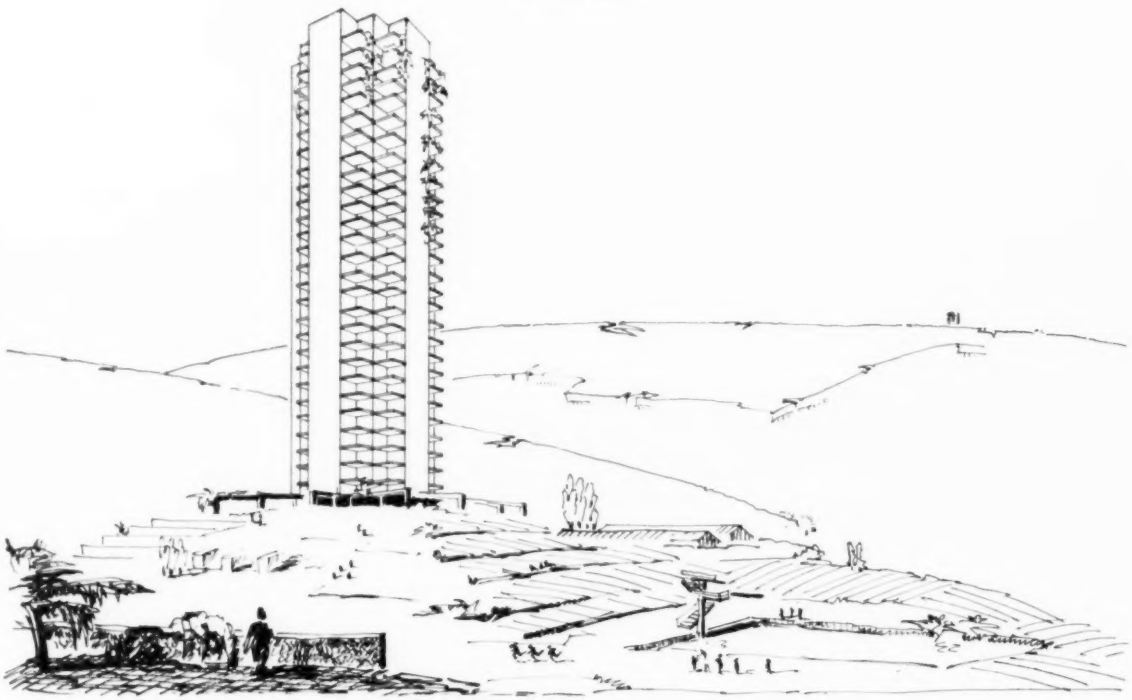




PLAN OF SUNLIGHT TOWERS

A. LAWRENCE KOCHER AND GERHARD ZIEGLER, ARCHITECTS

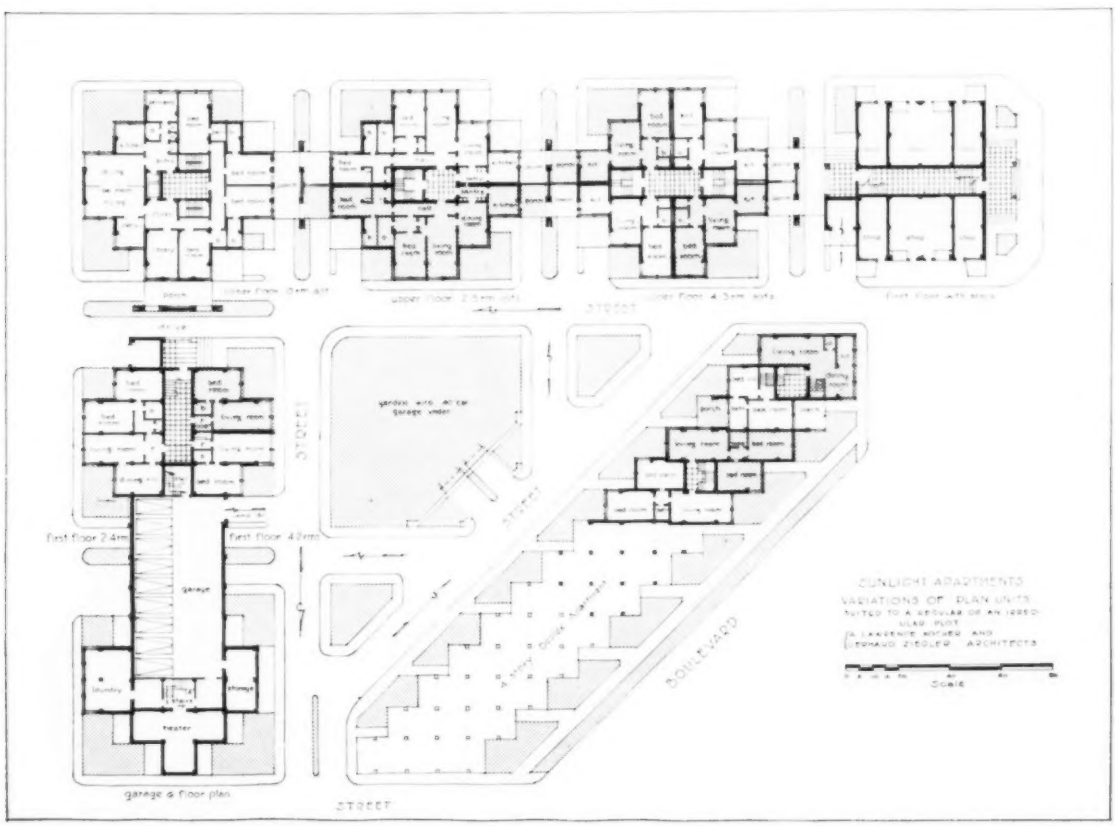
Variation of 1, 3, 6 and 10 room apartments. All rooms have outside exposure with view in two directions and cross ventilation. The utilities (elevators, stairways and public halls) are reduced to a minimum



WESTCHESTER

A. LAWRENCE KOCHER AND GERHARD ZIEGLER, ARCHITECTS

An apartment tower placed in open country, accessible from city by rapid transit or airline and taking advantage of space for outdoor sports. The natural setting, with this tower form, need not be spoiled as is the case in the usual suburbs with a network of narrow streets and houses placed at close intervals



SUNLIGHT APARTMENTS

A. LAWRENCE KOCHER AND GERHARD ZIEGLER, ARCHITECTS

Horizontal development of "sawtooth units" with a row of low buildings and multifloor apartment towers at ends or angles of rows. Floor plans may be subdivided as 1, 3, 6 or 10 room apartments with garden porches and main entrances between buildings. The garage is placed underground so as to be entered from the private street on which the apartments front. With gardens on roof there will be practically no loss of ground space. Gardens at rear of buildings take the place of usual auto drives

IMPROVED AERATED CLAY BUILDING UNIT

In the October issue of The Architectural Record, we called attention to the experimental work conducted in Germany on light weight brick wall panels. These experiments are considered by leading architects and engineers as promising an important new building material. This article said, "It is generally conceded by European architects who have made a study of the housing problem and methods of reducing housing cost, that a wall material *must* be found which is more efficient than our present form of brick wall. Whether this wall panel, in the future, will be a new type of brick wall or metal may depend to a considerable extent on the forethought and experimentation of manufacturers."

It is of interest to note that the Structural Clay Tile Association have seen this need and have developed such a material in this country. We expect that this new material will be on the market at some time during the year. Although this experimental work has been under way for several years, details of the process have been kept secret until the convention held in Columbus, Ohio, February 12-14.

The research work on this material has been conducted by the Engineering Experiment Station of Ohio State University under the direction of George A. Bole, Professor of Ceramic Research, H. D. Foster, Senior Research Associate, and other employees.

The new product is an aerated clay weighing from ten to sixty pounds per cubic foot. For general building purposes, it will have a weight of thirty to thirty-two pounds a cubic foot, which is approximately one-quarter the weight of a cubic foot of brick. The compressive strength at this weight will be from five hundred to a thousand pounds per square inch, depending on the clay and the degree of burning.

LARGE SLABS

The outstanding feature of this material, aside from its excellent insulating and fireproofing qualities, is that it can be made in large slabs and used in much the same way as lumber or wall board. Slabs two to three inches thick, two to four feet wide and eight to ten feet high, with V-shaped, ship lap or tongue and groove joints, can be used for partitions and probably for exterior walls and roofs. For interior use, this may be left natural, plastered, or glazed.

GLAZED SURFACE FOR BATHS, KITCHENS, etc.

The material can be given a salt glaze in the course of manufacture at almost no additional cost, or it can be given a slip glaze of any desired color or combination of colors. It will thus be possible to have large units of structural wall with the additional advantage of tiled surface at a very greatly reduced material and labor cost as compared to tile.

GLAZED SURFACE FOR SPANDRELS, EXTERIOR WALLS, AND ROOFS

Experiments have not yet been conducted to determine the effect of freezing on this tile with a glazed surface but from experience with terra cotta and salt glazed clay products it seems probable that this material will stand up for external use. If such is found to be the case, it may be used in large panels for spandrels or exterior walls and possibly large roof panels. If used for roofing, the joints could be of Mastic or cement, or a weather-tight joint could be obtained by use of a copper weather-strip which would cover the joint between the slabs.

ACOUSTICAL USE

If sound absorption is desired, the interior walls may be without glaze. By using various clays and chemicals, a large variety of color effects may be obtained at time of manufacture. This material will have an advantage over many acoustical materials now on the market in that it will not be damaged by moisture and is excellent as fireproofing.

FIREPROOFING

The original purpose of the research was to find a highly efficient and light weight fireproofing product for protecting steel columns and girders. The other uses which have been discovered have grown out of the fireproof research.

A three-inch slab of this burned clay, unplastered, when subjected to the standard fire test (1200° F. at 10 minutes, 1550° F. at 30 minutes and 1700° F. at 1 hour) showed a rise in temperature of 250° F. at the end of one hour and twenty minutes which may be compared with thirty-four minutes for unplastered partition tile of equal thickness.

A fireplace constructed with a two-inch unglazed slab and four-inch backing with a one-inch face of glazed material is regarded as entirely safe. Although this material is intended for ordinary building construction, its fire resistance is so great that it will probably be used for furnace lining where refractory brick is desired. This material may be raised to 2000° F. and quenched in water without damage.

A special block form has been made which may be hung on the under side of steel joists for fireproofing, sound insulation, and sound absorption. When hung

on the underside of the steel floor system, the cellular construction would not only give accoustical absorption within a room but the upper surface would absorb sound from the floor above.

HEAT INSULATION

Experiments and test data indicate that this aerated clay will have approximately the same insulating value as aerated gypsum of similar weight under actual building conditions. A three-inch wall with two glazed surfaces will have a heat transmission factor of approximately .25 B.t.u., which may be compared with .27 B.t.u. for thirteen-inch brick wall, .20 B.t.u. for twelve-inch hollow tile with stucco finish, or .60 B.t.u. for four-inch hollow clay tile one-half inch plaster on both sides.

An outstanding advantage in the use of this material for insulation is the airtight and watertight glaze coating which will prevent the entrance of moist air and the consequent reduction in insulation value. If, for decorative or acoustical purposes, it is desired to avoid a glaze finish the glazed blocks can be manufactured with a surface of unglazed material over an under coating of glaze.

BLOCKS

Blocks of regular size and shape may be cut by use of wire at the end of the conveyor belt. The cells may be left open when desired for plaster base or a slip (clay of creamy consistency) applied if a smooth glaze is desired. Slabs of this material 1″ x 24″ x 24″ may be burned in twelve hours at a temperature of 2000° F. with practically no warping and with only a shrinkage of from three to five per cent between green and dry dimensions.

LARGE UNITS

Large units for use as partitions or insulation may be manufactured by first burning the material in slabs 1′ to 2′ thick, 2′ to 8′ wide and 10′ or longer. (The width and length will be determined by use to be made of the material and possibly limited by difficulties in handling the longer pieces. At the present time it will be possible to make slabs with the two-foot cross-section and ten feet long, these units to be fired without glaze and then sawed in much the same manner as a log would be sawed. The material cuts more easily than soft wood. This slab can be sawed into any shape or thickness desired and can be run through wood-working machines for molding or other decoration. The material may be used as cut if it is desired or it may be given a mottled or smooth glaze by refiring if such a finish is desired.

LARGE GLAZED UNITS

Large glazed units for use for bathroom or kitchen walls or other places where a tile finish is desired can be made by cutting the material either in the green or fired state, to the desired size and applying a salt glaze, or color slip finish.

COSTS

In absence of any definite authoritative estimates we have prepared our own estimate, the overhead and profit items of which are based on sales prices of hollow clay tile in the Chicago district. This estimate indicates that the new material may be sold at approximately two cents per board foot. These estimates would seem to be conservative in view of the fact that the weight per unit is less and the power requirements are considerably less than for hollow clay tile.

SAVINGS IN BUILDING COSTS

Although the cost of the new aerated clay units may be approximately the same per volume or weight as hollow tile blocks, very considerable savings would be effected through combining in one unit structural fireproofing and other functions which now require a variety of additional materials.

The new material may replace many of the separate materials generally required to obtain a finished wall such as: plaster for interior finish; interior tile or exterior terra cotta for a glazed surface; asphaltic or other materials for waterproofing; cork or other materials for heat insulation; and concrete for fireproofing of structural steel; not to mention various sound absorptive materials.

Editor's Note:—In the April issue of the RECORD will be described a new clay product which is being developed by Joseph B. Shaw, Head of the Department of Ceramics of Pennsylvania State College. In his process "the equipment and processes of the steel industry replace in large measure those of the present day ceramic plant. The product receives its ultimate shape by pressing or rolling.—The articles so shaped . . . will have properties enabling them to replace steel and concrete in many places . . . these units may be produced in units up to 8′ x 20′ in size." (Extract from letter from Mr. Shaw and from his article to appear in the March 1st issue of the *Journal of the American Ceramic Society*.)

EFFICIENCY METHODS APPLIED TO KITCHEN DESIGN

Even the best and most efficient of our present day apartment kitchens fall far short of the efficiency methods which are being applied to industrial processes. Some attention has been paid in kitchen planning to the problem of correct routing of work *but almost no attention has been given to the equally important problems of circular work spaces and correct working heights for each individual. For example, the generally accepted height of 36" may be right for thirty or forty percent of the women and quite inconvenient for the balance. The study which follows is the outgrowth of the belief of Miss Mary Dillon, President of the Brooklyn Borough Gas Company, that kitchens needed engineering thought in order to reduce effort. She therefore engaged an efficiency engineer, Dr. Lillian M. Gilbreth, to study the kitchen as an industrial production problem. The outstanding conclusion of this study was that the modern kitchen, although it possesses many attractive appliances and appears to be efficient, is far from approaching the efficiency standards that prevail in the best industrial plants.*

PROCEDURE IN MAKING KITCHEN EFFICIENCY STUDIES

Statement of Problem

The first step in the preparation of an efficiency study of a kitchen, is to state the conditions in definite terms: 1st, general statement of use, space, time and money requirements, and 2nd, material requirements for storage, transportation, containers, preparation, operations, and clean-up.

It was assumed that the kitchen was to serve and be used by a family (father, mother, baby and a child old enough to help a little with the work). The same operation principle applies to a house with a maid.

Space

The study as conducted was limited by the fact that the kitchen size had to be approximately 10′ and 12′ in order to utilize the space assigned for this kitchen in the Exposition of Woman's Arts and Industries. And the problem was further complicated by the necessity of providing space for the passage of visitors but the principles of the circular work spaces, posture of the worker, etcetra (as illustrated) can be applied to other sizes of kitchens or other working room.

Material Requirements

In order to better illustrate the principles of efficiency engineering, a simple problem, the making of a cake, was selected. The material requirements were refrigerator, kitchen cabinet, stove, sink, service table, dish cupboard and dining table.

Analysis of Processes

An ordinary kitchen, see plan on next page, was assumed and all the processes involved in making cake in this kitchen gone through. Fifty operations were noted and a total of 143 feet would be walked in the preparation of this cake. The analyses of this project are shown in the adjoining Process Chart.

Making Efficiency Plan

The method of working our plan which would reduce the number of processes was quite simple with the cooperation of Miss Jane Callaghan of the Brooklyn Gas Company. Dr. Gilbreth made scale drawings of the furniture which were then cut from stiff paper and moved about on a floor plan and the length of the worker's reach, roughly half the distance from finger tip to finger tip when the arms are outstretched sideways—was taken on the compasses and used to test each grouping.

A drawing was made of the best arrangement and the process chart revised accordingly.

When a string plan was made on the improved layout, it was found that only about one-sixth the original amount of walking was required, and all of it was "get ready" and "clean up" and none of it in the actual making of the cake.

This rearrangement of the equipment resulted in reducing the number of operations from 50 to 24 and reduced the distance to be walked from 143 feet to 24.

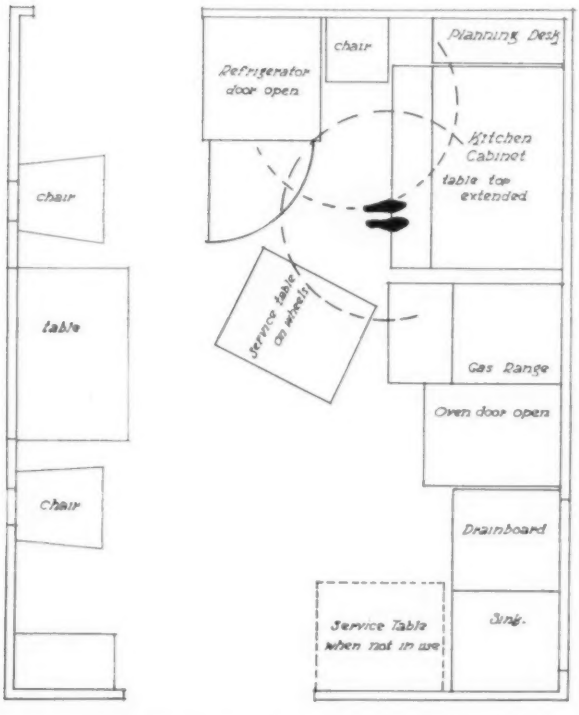
Routing

The relationships of equipment obtained by an analysis of the process was related to the room and to other processes. The delivery man deposits milk, eggs, and groceries inside the rear door without having to go through the kitchen. The homemaker places them with little effort inside the refrigerator and kitchen cabinet. Cooking materials are then transported with little effort to the cabinet table and prepared for the stove. Food when cooked is routed from stove to sink or service table, from thence to dining table and after the meal to refrigerator, cabinet, sink, et cetera, as the case may be.

Circular Work Space

The circular work space idea has been carried through in the planning of this kitchen. If the housewife stands at the point indicated by the footprints on the floor plan, she is within easy reach of the major portion of the equipment which needs to be used in most cooking projects. The chair before the planning desk forms the center of a circular work space which would be used while planning meals or ordering. Other centers would be set up for other processes such as dish washing, where the movable service table would function.

ORIGINAL KITCHEN LAY-OUT: 50 PROCESSES AND 143 FEET OF WALKING



IMPROVED KITCHEN LAY-OUT: 24 PROCESSES AND 24 FEET OF WALKING

PROCESS CHART
MAKING A COFFEE CAKE
ORIGINAL LAYOUT OF KITCHEN

1. Light oven
2. Walk to kitchen cabinet
3. Open kitchen cabinet, assemble recipe and dry ingredients
4. Walk to closet
5. Assemble pans, bowls, spoons, etc.
6. Carry pans, etc. to kitchen cabinet
7. Assemble pans, etc. on kitchen cabinet
8. Carry pans, nuts, sugar-and-cinnamon to table
9. Assemble pans, etc. on table
10. Walk to refrigerator
11. Open refrigerator, collect eggs, milk, butter and oil. Close refrigerator
12. Carry eggs, etc. to kitchen cabinet
13. Assemble eggs, etc. on kitchen cabinet
14. Measure ingredients
15. Carry butter to stove
16. Place butter on stove to melt
17. Return to kitchen cabinet
18. Carry oil to table
19. Grease pans
20. Return to kitchen cabinet
21. Mix cake
22. Carry cake to table
23. Pour cake into pans
24. Walk to stove
25. Carry melted butter to table
26. Put butter, sugar-and-cinnamon and nuts on cake
27. Carry cake to oven
28. Place cake in oven
29. Remove cake from oven
30. Carry cake to table
31. Remove cake from pans and set to cool
32. Carry remaining supplies to kitchen cabinet
33. Place recipe, nuts and sugar-and-cinnamon in kitchen cabinet
34. Carry remaining milk, butter and oil to refrigerator
35. Place milk, etc. in refrigerator
36. Return to kitchen cabinet
37. Assemble used utensils
38. Carry used utensils to sink
39. Walk to table
40. Carry used pans to sink
41. Wash and dry utensils and pans
42. Carry utensils and pans to closet
43. Place utensils and pans in closet
44. Return to sink
45. Carry dish cloth to kitchen cabinet
46. Wipe off and close kitchen cabinet
47. Carry dish cloth to table
48. Wipe off table
49. Carry dish cloth to sink
50. Tidy sink, wash dish cloth and towels and hang to dry

PROCESS CHART
MAKING A COFFEE CAKE
IMPROVED LAYOUT OF KITCHEN

1. Light oven (covers 1)
2. Walk to kitchen cabinet and adjust service table
3. Open kitchen cabinet, assemble recipe, dry ingredients, pans and utensils on kitchen cabinet and service table (2,3, 4,5,6,7,8,9)
4. Open refrigerator, collect eggs, milk, butter and oil (10,11,12)
5. Assemble eggs, etc. on kitchen cabinet (13)
6. Measure ingredients (14)
7. Place butter on stove to melt (15,16,17)
8. Grease pans (18,19,20)
9. Mix cake
10. Pour cake into pans (22,23)
11. Search for melted butter, put butter, sugar-and-cinnamon and nuts on cake (24,25,26)
12. Place cake in oven (27,28)
13. Turn off oven and remove cake from oven (29)
14. Place cake on service table, remove from pans, set to cool (30,31)
15. Place recipe, nuts and sugar-and-cinnamon in kitchen cabinet (32,33)
16. Place milk, etc. in refrigerator (34,35,36)
17. Place utensils on service table (37)
18. Move service table to sink (38,39,40)
19. Wash and dry utensils and pans and place on utility table. Add dish cloth
20. Move service table to kitchen cabinet (42,44,45)
21. Replace pans and utensils in kitchen cabinet (43)
22. Wipe off and close kitchen cabinet (46,47,48)
23. Carry dish cloth to sink (49)
24. Tidy sink, wash dish cloth and towels and hang to dry (50)

APPLICATION OF MOTION STUDY TO KITCHEN PLANNING: MAKING A CAKE

In this kitchen there has been a very careful attempt to stress the proper height of work place and equipment. A woman 5′ tall was selected as the housewife and everything possible adjusted to fit her. The work place was measured in its relation to the height of the elbows of the worker when standing. (She should stand erect with arms comfortably relaxed and the work place be so arranged that she may do the work with greatest comfort in that posture.) When she is seated, her work place should remain at the same relative height to her elbows. In the selection of the equipment certain heights had of course to be considered, the working surfaces in the refrigerator, the height of the working surface of the stove and kitchen cabinet. It was possible to make heights only relatively right by selection of legs of equipment bringing it to most nearly the right height, raising the height of the work table, selection of such smaller pieces of equipment as will keep the worker as nearly as possible in the right relation to her work.

EQUIPMENT

Planning Desk

This is perhaps one of the most important new additions to equipment of efficiency kitchen and one that is seldom provided. The home maker can check the supplies in the refrigerator and the kitchen cabinet from her chair by the planning desk. Receipts, cook books and bills are kept in this desk.

Kitchen Cabinet

The kitchen cabinet was one of the newest and most efficient on the market but Dr. Gilbreth says, "From the standpoint of the efficiency engineer all kitchen cabinets need to be restudied by their manufacturers. The aims are excellent but they have not been thought through in terms of final use in connection with other equipment. The selection of this model cabinet, and the fact that it is possible and advisable to place it near the stove, has far reaching effects on the placing of cooking materials, utensils, etc."

"An efficient kitchen cabinet *should be flexible as to height.* The working surface should as nearly approximate a correct work place as is possible. This thing *has not been considered in any kitchen cabinet now on the market which I have seen.* Drawers, cupboard, etc., which are all a part of it should be arranged so as not to interfere with the comfort of the seated user. Doors should be made so as not to interfere with the use of any part of the cabinet when open or with the use of the stove, the sink, the work table, or anything else used in conjunction with the kitchen cabinet."

The kitchen cabinet should not be designed as an attractive piece of furniture into which various types of equipment used in cooking can be put, but as an efficient and attractive container making as many as possible of the things used in cooking available to the user with the fewest and most comfortable motions. The *operations* done in the kitchen *should be studied;* the materials and equipment for these operations placed in the best positions possible and the kitchen cabinet built around these.

Refrigerator

The refrigerator chosen was the model separate from the stove, as it was felt that the combination refrigerator and stove did not offer sufficient refrigeration space for the family of four. The white model was chosen as apt to fit into more color schemes and perhaps suggesting absolute cleanliness to the housewife. The size was that thought best fitted to her needs and her purse.

The *refrigerator is still handicapped in design* by the old type of refrigerator which required ice. It should be possible to make a refrigerator more nearly meeting the needs of the individual user. The present refrigerator is so high that its top cannot be used for a work place. There might be flexibility as to the placing of the various shelves and compartments, to suit the varying food supply of the family using the refrigerator. The new type of refrigerator comes into the kitchen and might serve many purposes which it could not serve when it was out of doors.

In time a refrigerating *unit* may be designed, this to be housed in a container which will fit into the kitchen-unit.

Stove

The stove was selected primarily because of its safety features. Those are imperative with small children in the family. Not only do the safety devices on the handles controlling the gas make this an especially desirable model where children come into the picture, but the attachment for the kettle and other cooking utensils for long, slow time cooking, serves as a protective device for children who might otherwise tip some hot food over on themselves. The surface of the range should be such as to make it comfortable to use when standing. The heights of ovens, etc., should be thought through with reference to both standing and sitting users. The circular work place should be considered here also. As in the case of the kitchen cabinet, all uses of the stove should be considered and the easiest motions for these used. The stove should then be designed to make these easy motions possible.

Sink

One cannot use any sink available for dishwashing efficiently without adding such accessories as rubber mats, wooden racks, and a basket for drying dishes. These aids to dishwashing should be incorporated in a unit sink set up, or better still a sink may be invented making such accessories unnecessary. The electric dish washers now on the

Photo, Lazarnick

DEMONSTRATION KITCHEN OF BROOKLYN BOROUGH GAS COMPANY, BASED ON MOTION STUDY (*See text*)

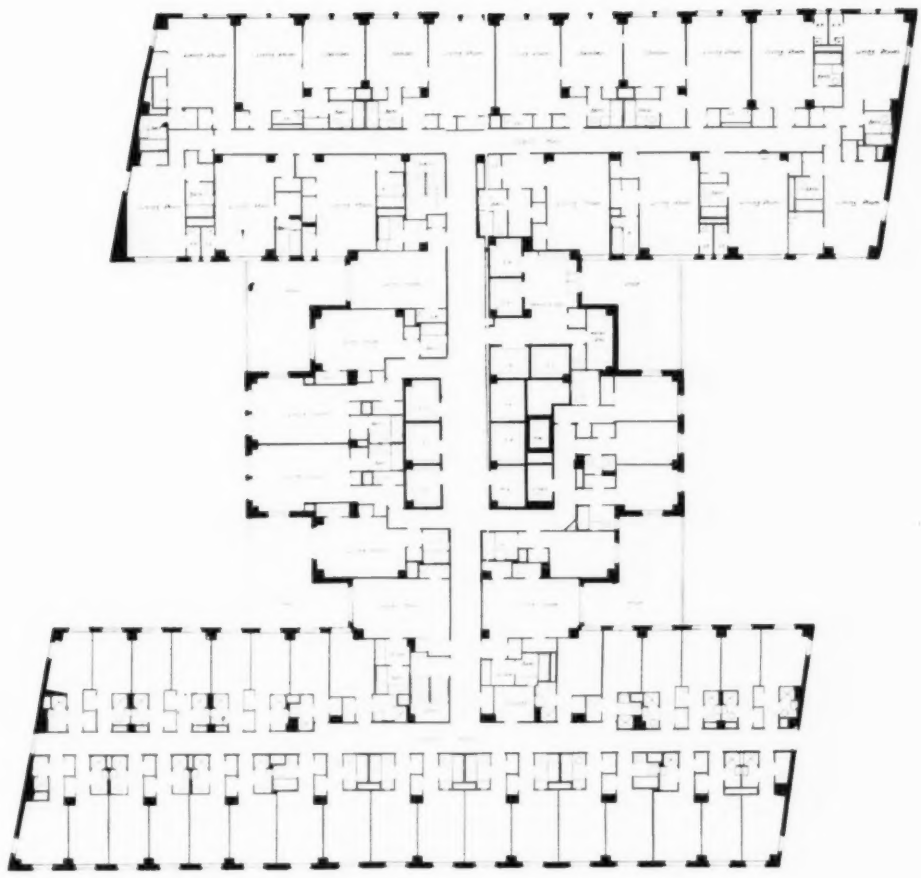
market are too expensive for the average medium priced small apartment.

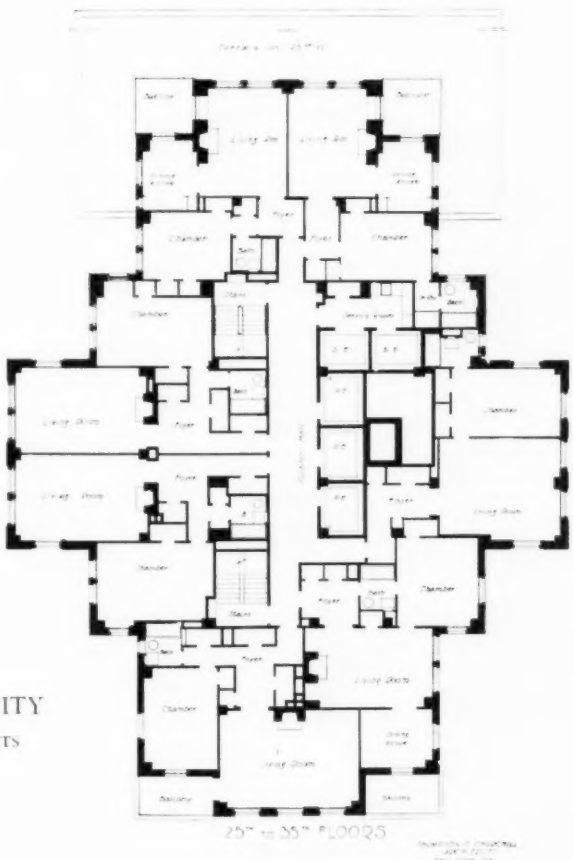
Service Table

The service table selected was chosen largely because of its availability. Its first purpose was to serve as the second drain-board but it is to be used also as a transportation device and auxiliary work place. The height of working surfaces was studied in relation to the height of the worker. Standing erect with arms comfortably relaxed to the elbows she should be able to work without stooping or having to lift her hands above the level of the elbows. The height of the work chair is adjusted to maintain this same relationship when the worker is seated.

Summarizing this kitchen study, Dr. Gilbreth says, "There are a certain number of suggestions which it is hoped this kitchen will make to the homemaker and to those who serve her in retailing and manufacturing. One is that a *home is a complete project* and anything in it, *no matter how small*, must be thought of in connection with *this complete project*. In a smaller way *the operation of the kitchen is a complete project and must be thought through as such.* Buying any piece of equipment, large or small, should be considered in its final use; otherwise it is very wasteful.

The manufacturer must realize that at present he has little knowledge of what the housewife needs. She herself seldom knows what she wants, much less what she needs. The progressive manufacturer must determine the work his product should do and then make that product in such a way that it will do this work for its purchaser most effectively. The home maker has certain physical and emotional qualities, peculiarities and limitations which he should try to understand and satisfy. He must remember not only that his product is used by a person with individuality but must also fit into a circular work space. Unless manufacturers think along these lines the engineer, architect and home economist will combine on projects to supplant existing equipment in the home."





BATTERY TOWER, NEW YORK CITY

THOMPSON AND CHURCHILL, ARCHITECTS

(*See frontispiece*)

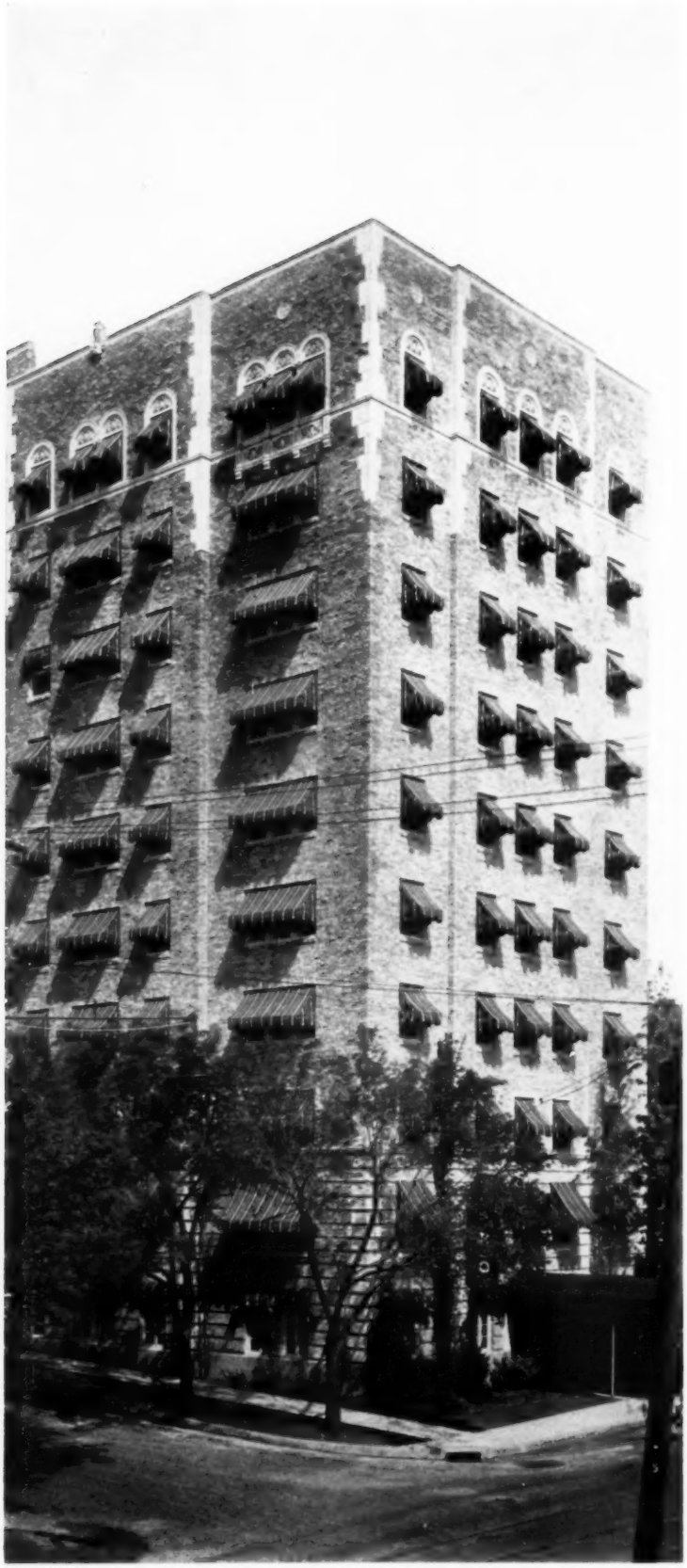
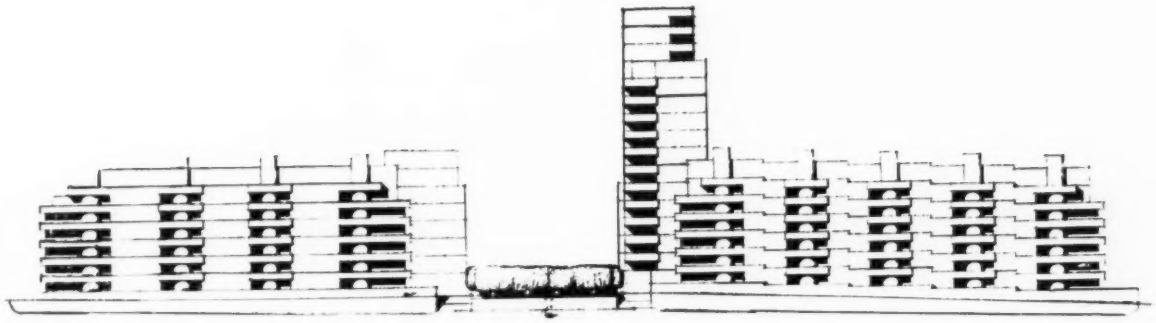


Photo. The Hoxards

APARTMENT BUILDING,
TULSA, OKLAHOMA

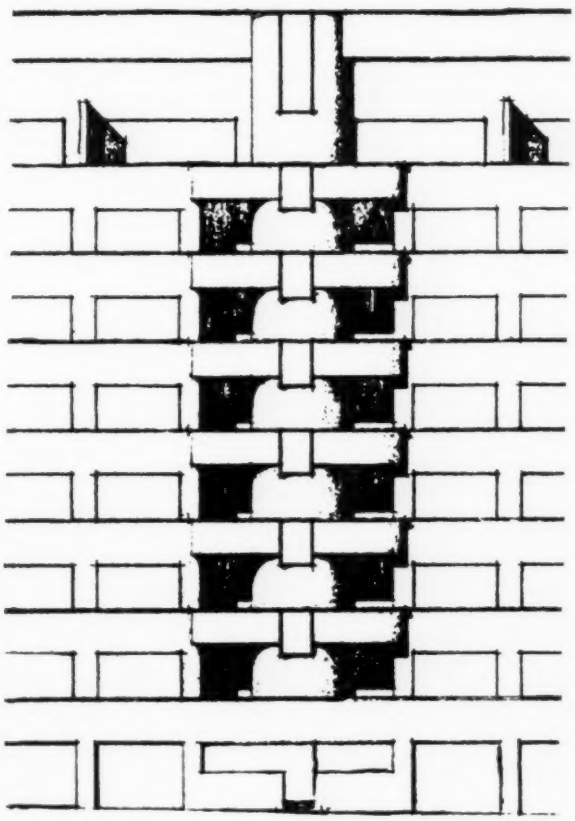
NELLE E. PETERS, ARCHITECT



ELEVATION FROM THE STREET

Photo. Das Werk

STREET FACADE



DETAIL OF ELEVATION

APARTMENT GROUP, QUARTIER DES DEUX-PARCS, GENEVA, SWITZERLAND

BRAILLARD ET VIAL, ARCHITECTS

PHOTOGRAPHIC
SELF-PORTRAIT
BY EL LISSITZKY
from photo-eye

THE ARCHITECT'S LIBRARY

THEATRES

JOSEPH URBAN
Theatre Arts, Inc. New York, 1929.

Every type of drama, opera, and motion picture requires a setting—the theatre—for its specific purpose. In the six theatres designed by Joseph Urban and illustrated in this volume, the effort has been to differentiate between the principal elements of dramatic entertainment and to discover an expression for each appropriate site and use.

These theatres range in date from the Ziegfeld in New York in 1926, to the project for a Music Center, conceived in 1929. In so short a time Urban has done more for theatre expression than any other architect in a single field of architectural endeavor.

The forty-nine illustrations include plans, sections, models, renderings and completed theatres.

PHOTO-EYE

FRANZ ROH AND JAN TSCHICHOLD
foto-auge, Text in German, French and English, 76 illustrations, 1929; Akademischer Verlag, Stuttgart, 1929, $2.50.

THE camera as utilized by the two authors and their associated contributors as a medium of pictorial *sport*. New possibilities for draftsmen, and photographer-reporters are rated secondary to the use of the camera by the amateur.

The book accepts the world as beautiful but it is also exciting, cruel and weird. Pictures were therefore included that might shock the sensibilities of some aesthetes. There are five kinds of applied photography represented. (1) the *reality-photo* with details of everyday life from new angles, brought out clearly; (2) the *photogram* which "hovers excitingly between abstract geometrical tracery and the echo of objects"; (3) *photo-montage*, produced by cutting and combining parts of different photographs; (4) photo combined with etching or painting; and (5) photos in relation to typography.

The statement is made that not to be able to handle a camera will soon be looked upon as equivalent to illiteracy.

MISDIRECTED ENTERPRISE?

SZUKALSKI
Projects in Design. U. of Chicago Press, 1929. $20.

In the preface it is stated that "Stanislaw Szukalski is either worshipped or condemned—never treated with indifference." Well, here is almost complete indifference—punctuated by one sigh for the critical judgment of the University of Chicago Press. Whether in dealing with contemporary art the universities dwell in their accustomed formalism, or whether they turn for a change to such foolish Big Talk as this, their general lack of measure is equally painful.

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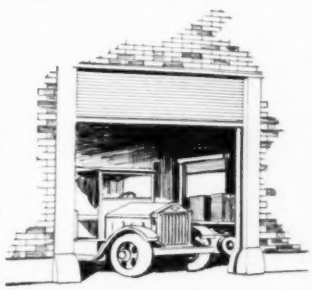
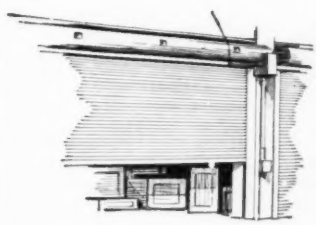
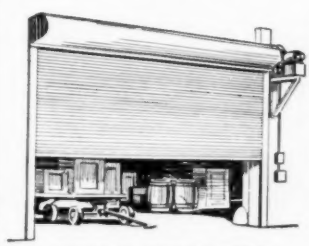


SERVICE DOORS



FIRE DOORS *and* FIRE SHUTTERS



MOTOR OPERATED DOORS

CONSTRUCTION STATISTICS

From the records of F. W. Dodge Corporation, Statistical Division. The figures cover the 37 states east of the Rocky Mountains and represent about 91 per cent of the country's construction volume.

Year, 1929

	TOTAL CONTRACTS		WORK PLANNED BY ARCHITECTS		
	Number of Projects	Valuation	Number of Projects	Valuation	Per Cent of Total
Commercial Buildings	24,137	$ 932,688,400	10,228	$ 717,872,600	77
Industrial Buildings	6,680	756,512,400	2,307	187,070,000	25
Educational Buildings	4,531	381,908,000	3,647	363,527,100	95
Hospitals and Institutions	1,190	152,203,700	887	136,644,600	90
Public Buildings	1,303	120,777,900	755	111,110,900	92
Religious and Memorial	2,277	106,111,200	1,600	94,213,500	89
Social and Recreational	2,484	140,019,400	1,505	115,059,900	82
Residential Buildings	110,498	1,915,727,500	28,106	1,156,872,600	60
Total Building	153,100	4,505,948,500	49,035	2,882,371,200	64
Public Works and Utilities	19,072	1,248,342,000	360	34,777,500	3
Total Construction	172,172	$5,754,290,500	49,395	$2,917,148,700	51
Total Construction, Year 1928	200,255	$6,628,286,100	59,956	$3,639,018,800	55